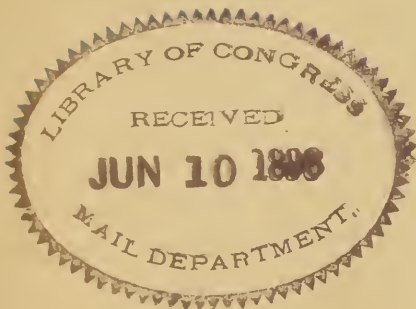
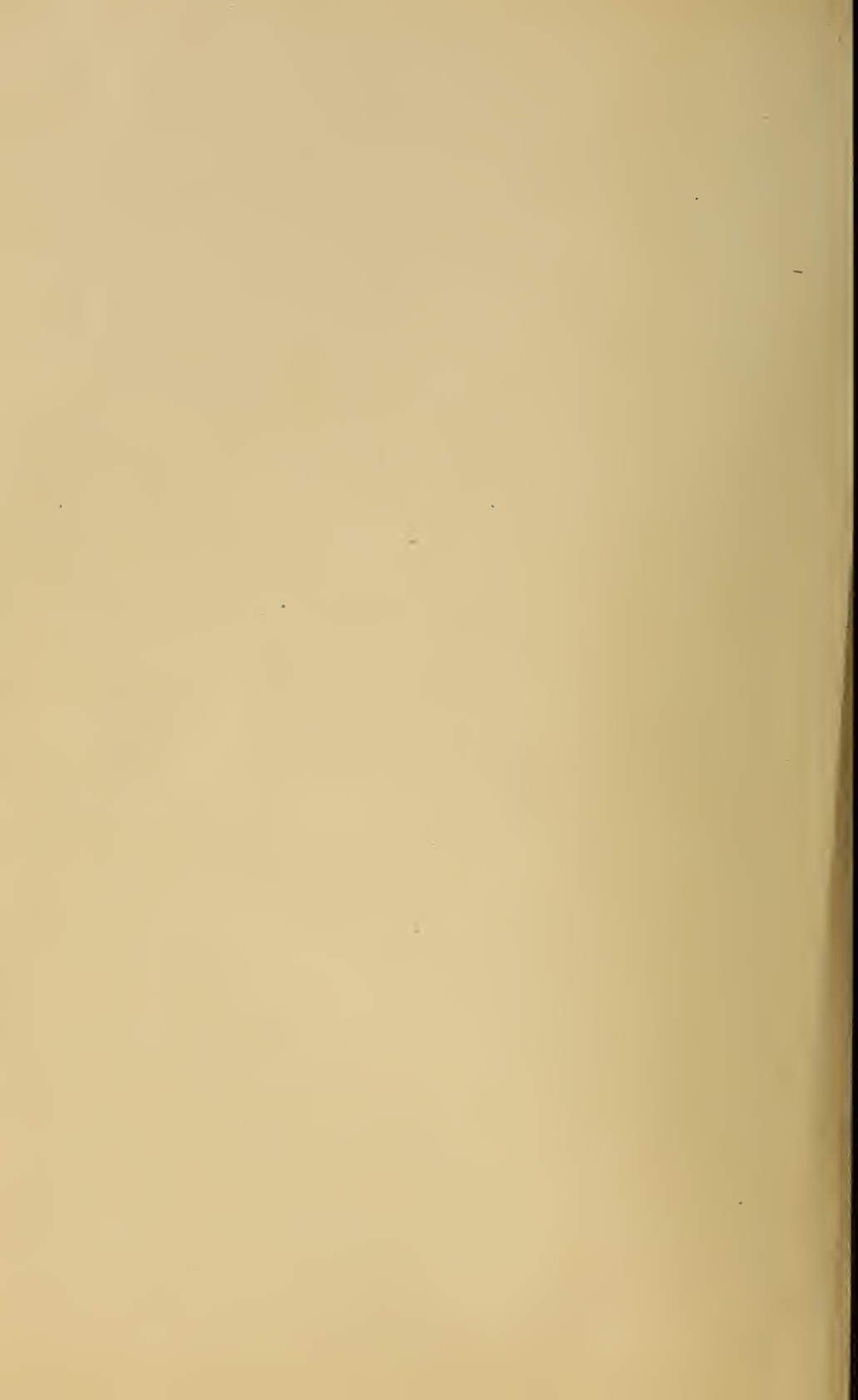
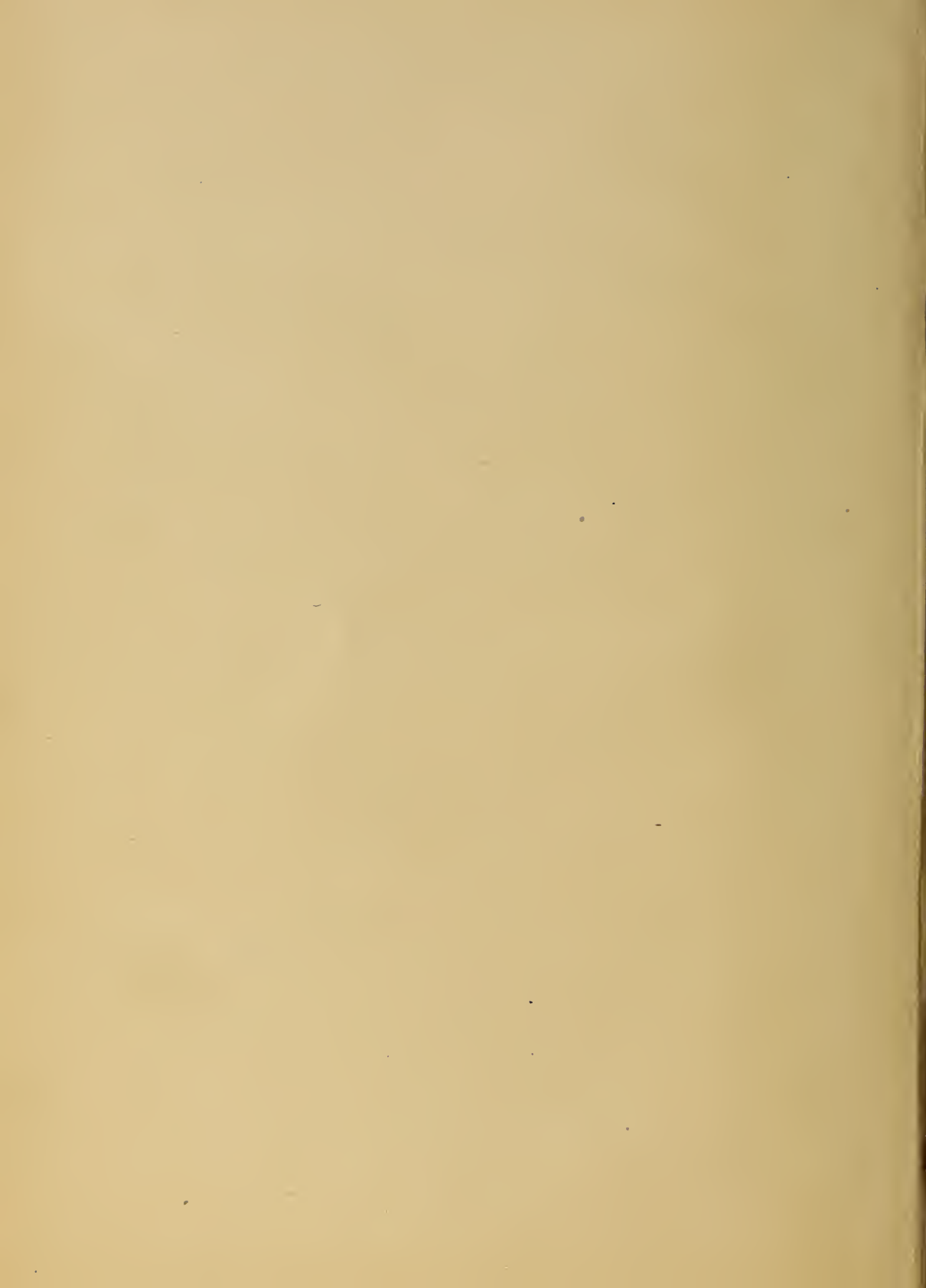


LIBRARY OF CONGRESS.	
Chap. <u>RC 206</u>	Copyright No. _____
Shelf <u>.T72</u>	
UNITED STATES OF AMERICA.	







YELLOW FEVER.

CLINICAL NOTES

✓
BY

JUST TOUATRE, M. D. (Paris),

FORMER PHYSICIAN-IN-CHIEF OF THE FRENCH SOCIETY HOSPITAL, NEW
ORLEANS; MEMBER OF BOARD OF EXPERTS, LOUISIANA
STATE BOARD OF HEALTH.

TRANSLATED FROM THE FRENCH

BY

CHARLES CHASSAIGNAC, M. D.,

PRESIDENT NEW ORLEANS POLYCLINIC; EDITOR NEW ORLEANS MEDICAL
AND SURGICAL JOURNAL, ETC.

NEW ORLEANS:

NEW ORLEANS MEDICAL AND SURGICAL JOURNAL, LTD.
1898.



2nd COPY, TWO VOLUMES RECEIVED.
1898. 25701

206

8155

Copyright, 1898.

JUST TOUATRE,
New Orleans.

PRESS OF
L. GRAHAM & SON, LTD.
NEW ORLEANS.

TRANSLATOR'S NOTE.

The legend "translated from the French," which appears on the title page, would probably be misconstrued if no explanation followed. It might be supposed that this work had previously been published in the original text.

Such is not the case. This is the original edition. Dr. Touatre wrote it in his mother tongue because he modestly thought his English not equal to the task.

I fear he was mistaken, as I feel that in the translation much has been lost in point of style. I have carefully followed the text, however, and believe that the author's ideas have been faithfully reproduced.

C. C.

INTRODUCTION.

During nearly twenty years, ever since Pasteur's immortal discoveries, the activity and the genius of young physicians have been devoted to the search for pathogenic microbes; to unceasing investigations upon their method of life, of development, of prospering, and of doing harm; and to the minute study of their associations, combinations, and, especially, of the poisons they manufacture.

The study of the patient, without being neglected, no longer holds the first place, and the clinical work on Yellow Fever I am now submitting to the judgment of the medical public may appear to some not sufficiently *fin de siecle*.

It might have had better chances of success twenty years ago, but I believe it can be of great service even to-day. I shall not quote the French proverb which says that experience surpasses science, for the two are indispensable in the practice of Medicine.

The wonderful work achieved in the laboratories deserves all of our admiration, and physicians and surgeons both profit by it daily in curing their patients; yet, if knowing the cause of a disease is of the highest importance, it is also necessary to know how the organism, as a whole, how its cells, its organs and its functions are affected by the pathogenic microbe and its virus.

It is at the bedside that we learn the course of the disease, the value or importance of a symptom, and the propriety or urgency of such and such medication. Hence, I believe that while it is necessary to keep an eye on the microbe, the enemy, both eyes must be kept wide open on the patient, the victim.

Sanarelli's discovery of the bacillus icteroides and his valuable explanatory works certainly throw light in some dark corners of the study of Yellow Fever, but they also bring out in relief previously acquired clinical ideas.

Bacteriology and Practice must march hand in hand and assist each other ; for, if the culture tube and the microscope increase our knowledge and make it more precise, it is Medicine which must apply the new-born truths to the cure of the patient and the clinician must remain the high-priest of Medicine. Because long range cannons and melinite shells are now manufactured does not mean that the gunner handling the piece has lost his skill.

Convinced that clinical observation and its lessons may enlighten the physician, and, in consequence, render important services to the patient, and urged by a few friends, I have written this monograph, condensing in as clear a manner as possible the experience acquired while treating over two thousand patients attacked by Yellow Fever.

I am not a great bibliographer it is true, but I have no knowledge of any book treating this disease solely from a clinical standpoint. All treatises on Yellow Fever are didactic, and refer particularly to pathology ;

a morbid entity, the front aspect of typhus icteroides, is described, while I penetrate into the interior and nose into all the little corners.

A member of the Board of Experts of the Louisiana Board of Health, I had the opportunity, during the epidemic of 1897, to realize that many young physicians of instruction and ability, who had properly studied Yellow Fever in the books, knew little of the disease. This is not a reproach, as I have been in the same boat. Forty years ago Faget called attention to the fall in pulse rate; twenty-five years ago he promulgated the law of the divergence between pulse and temperature, which bears his name; yet these two symptoms, which are observed only in Yellow Fever, which characterize it and are pathognomonic, are very little known, imperfectly observed and badly appreciated.

Faget's name must be inscribed with letters of gold in the history of Yellow Fever, as is that of Bouillaud in the history of rheumatism; long before the time of Pasteur and of Sanarelli he had called attention to the specificity of Yellow Fever by studying the disease with the watch and the thermometer; if the labors of that eminent physician have not obtained the recognition they deserve, it may be because his discoveries were presented in a manner perhaps too didactic. I shall attempt to make them better known, and to demonstrate their whole value.

I shall even enlarge and treat in its entirety the question of temperature in Yellow Fever, which regulates everything, the diagnosis, the prognosis and

the treatment. Forty-six clinical charts of the pulse and temperature are published, together with the bedside observations and comments thereon; they form an interesting collection, which I believe very instructive, as it includes all types, forms and varieties of Yellow Fever at all periods of life. They form the most original and, I believe, the most useful part of my clinical notes.

I have written a long chapter on the Yellow Fever of children, with observations; it should settle the question, yet discussed by some stragglers, as to whether they get this fever or not.

The diagnosis of Yellow Fever is usually easy, but I have devoted a long chapter to it because it is important at the outset of the disease to make, not only the diagnostic label, but the diagnosis of the patient.

A study of the history of the last thirty-three epidemics which have prevailed in New Orleans has led me to formulate two laws which I believe very important and which I have developed in the chapter on prognosis. I call the reader's attention to this chapter, as I believe it very suggestive.

Finally, I have described minutely the treatment to which I resort and why I do so. In all the books on Yellow Fever one reads, in the chapter on treatment: "Everything has been tried, nothing has succeeded." This pessimism is heartrending as well as entirely false.

Good treatment yields excellent results and the physician is just as well armed for battle against

Yellow Fever as against any other disease. However, he must act promptly and begin the defence immediately after the attack.

“*Macaque toujours trouvé so piti joli*,”* but, making allowance for the excellent opinion which an author always has for his book, I believe that my thirty-three years of study and the nine epidemics through which I have passed, have allowed me to observe many shades and note many peculiarities which few physicians have seen and to become intimately acquainted with Yellow Fever.

At my age, on the eve of my return to France after thirty-three years of the practice of Medicine in New Orleans, I seek *ni honor ni argentum*. My only desire is, if possible, to leave to this country, which has been so hospitable to me, a useful book as a token of gratitude.

JUST TOUATRE.

* A Creole proverb, meaning that even a monkey finds its child pretty.

TABLE OF CONTENTS.

CHAPTER I.

General Observations.

	Page.
How to proceed in order to recognize the disease promptly	I
Interrogatory of patient.....	4
Duration of disease.....	6

CHAPTER II.

Symptomatology.

Symptoms of invasion	8
Symptoms of disease proper	10
Symptoms of termination.....	12
Fulminating invasion	17
Cephalalgia	18
Rachialgia	18
Nausea and vomiting	19
Hemorrhage	20
Icterus.....	24
The urine and albuminuria	25
Pulse and temperature.....	30

CHAPTER III.

Fall in Pulse Rate—Faget's Law—Clinical Charts of the Pulse and Temperature—Types and Variations of Yellow Fever.

Observations	36
Charts Nos. 1 and 2—Mild Yellow Fever.....	42

	Page.
Charts Nos. 3 and 4—Mild Yellow Fever	44
Chart No. 5—Mild Yellow Fever—Complication ..	46
Chart No. 6—Yellow Fever of moderate intensity..	48
Chart No. 7—Severe Yellow Fever	50
Chart No. 8—Yellow Fever of moderate intensity..	52
Chart No. 9—Yellow Fever of moderate intensity and remittent.....	54
Chart No. 10—Grave remittent Yellow Fever.....	56
Chart No. 11—Very grave Yellow Fever	58
Chart No. 12—Grave Yellow Fever.....	60
Chart No. 13—Pure Yellow Fever—Black Vomit	62
Chart No. 14—Yellow Fever with Acute Nephri- tis—Black Vomit and Anuria.....	66
Chart No. 15—Fatal Yellow Fever without Black Vomit	68
Chart No. 16—Pure Yellow Fever—Very Virulent	70
Chart No. 17—Pure Yellow Fever.....	72
Chart No. 18—Fatal Yellow Fever—Organic Weakness.....	74
Chart No. 19—Patient in Feeble Health and Slightly Alcoholic.....	76
Charts Nos. 20 and 21—Yellow Fever with Alco- holism and Nephritis.....	78
Charts Nos. 22 and 23—Yellow Fever with Alco- holism and Nephritis	80
Charts Nos. 24 and 25—Yellow Fever in the Alcoholic	82
Chart No. 26—Very Grave Yellow Fever— Typhoid Aspect	84
Chart No. 27—Very Grave Yellow Fever— Patient 40 Years of Age	86
Chart No. 28—Yellow Fever and Alcoholism— Atypic Curves.....	88
Chart No. 29—Grave Yellow Fever—Black Vomit	90
Chart No. 30—Yellow Fever—Pregnancy—Sup- purative Parotiditis	92
Chart No. 31—Very Grave Yellow Fever— Ecthyma Pustules—Sloughing.....	94

TABLE OF CONTENTS.

xiii

	Page.
Chart No. 32—Very Grave Yellow Fever—Black Vomit	96
Chart No. 33—Yellow Fever and Malaria.....	98
Chart No. 34—Mild Yellow Fever—Relapse.....	100
Chart No. 35—Very Grave Yellow Fever—Very Serious Relapse—Black Vomit both times.....	102
Conclusions	104

CHAPTER IV.

Yellow Fever in Children—Clinical Charts of Pulse and Temperature.

Observations	108
Charts Nos. 1 and 2—Mild Yellow Fever.....	112
Charts Nos. 3 and 4—Yellow Fever of Moderate Intensity.....	114
Charts Nos. 5 and 6—Yellow Fever of Moderate Intensity.....	116
Charts Nos. 7 and 8—Grave Yellow Fever	118
Chart No. 9—Grave, Remittent Yellow Fever....	120
Charts Nos. 10 and 11—Yellow Fever of Great Gravity	122
Conclusions	124

CHAPTER V.

Diagnosis.

Diagnosis of Yellow Fever	125
---------------------------------	-----

CHAPTER VI.

Prognosis.

Prognosis of Yellow Fever	143
---------------------------------	-----

CHAPTER VII.

Treatment.

	Page.
No Specific, but other means.....	163
Medication.....	167
Aeration of the Room	169
Clinical Observations and Recommendations	172
Treatment of the Period of Congestion and During the Course of the Disease	173
Foot Bath a la Créole	174
Cold Sponging.....	176
Cold Baths	181
For Vomiting.....	187
Diet	188
Drink	189
What Not to Do	196
Treatment During Period of Infection.....	200

CHAPTER I.

GENERAL OBSERVATIONS.

When, during an epidemic of Yellow Fever, a physician is called to the bedside of a patient, how must he proceed in order to recognize the disease promptly, to follow its course intelligently, and, especially, to seize at the earliest moment the indications for a useful and efficacious treatment?

He must at the outset be supplied with a thermometer, a watch with second hands, and a clinical chart; on the latter he must note, at least twice a day, all the symptoms observed, as well as the degree of fever, the number of pulsations, the amount of urine voided in twenty-four hours, and the results of the urinary analyses.

A complete clinical record, kept in writing and carefully taken, is of the highest importance. I can not insist too much upon this, for, during an epidemic, when one has from

fifteen to twenty patients or more to visit at least twice a day, it is absolutely impossible to remember the course of Yellow Fever, be it natural or irregular, in each patient. Hence, to the patient's great detriment, the disease is gauged from day to day, visit by visit, instead of being appreciated at the outset in its entirety.

Also, it is only after having gathered numerous observations, and by studying and comparing them, that the physician gets to know Yellow Fever in all its forms, its different types, at all ages, in all its variations, etc., and to acquire the necessary experience to treat this disease, which certainly is one of the most difficult, not only to observe well, but especially to treat well.

Yellow Fever presents symptoms which, when grouped and seen in block, make of it a perfectly typical affection resembling no other morbid entity, just as typical as Variola or Cholera.

At the bedside, however, the symptoms appear only in succession; the physician must consequently know thoroughly all the symptoms of Yellow Fever, and especially their succession, how to appreciate them, compare

them, and gauge them properly. The best method is to note them in writing, at each visit, as they appear in the patient.

The physician must never forget that Yellow Fever is an acute bacillary disease, with very virulent toxins, and of very rapid course, carrying away the patient the third or fourth day in very grave cases, on the sixth and seventh day in grave ones.

It is often certainly as virulent as Hemorrhagic Variola, Gangrenous Scarlatina, the Plague and Cholera. Hence, it is not when the infection is striking and complete, when the hepatic cells are degenerated, when the kidneys are closed, when the capillary vessels rupture and the patient has black vomit, that the physician can assist him. It is within the first seventy-two hours of the disease that medication may be potential and bold; but, in order that the treatment may be enlightened, appropriate, and energetic, the physician must perceive the pressing indications from the observation and appreciation of the symptoms; from, especially, the stomach and the kidneys, in order to obviate the patient's danger, or at any rate to diminish it.

For in Yellow Fever the struggle between

the organism and the microbe is merciless. The combat is eager and furious, full of tragic emotions, but often terminates in the victory of the organism, especially if the physician, instead of giving play to the microbe by ill-timed medication, is an enlightened auxiliary and a vigilant and well-armed ally.

INTERROGATORY OF THE PATIENT.—In Yellow Fever all information is useful.

At the first visit the patient must be asked his age; his birthplace; whether he has passed through Yellow Fever epidemics; whether he has been ill during such epidemics; if he has had other infectious diseases, such as Typhoid Fever, Scarlatina, etc. Information must be sought as to his habits; as to whether he nourishes well, whether he indulges in alcoholic drinks; as to his trade or profession; whether he fatigues himself; whether he works at night, or commits excesses and of what kind.

In fact, it is necessary by a complete interrogatory to judge what is likely to be the amount of his organic resistance and to know how well armed he is for the battle which is beginning and whose stake is his life.

All these investigations are of the highest importance, as, for instance, in the child or

adolescent free from hereditary or acquired taint, Yellow Fever is always very mild if no resort is made to disturbing medication ; in the alcoholic, Icteroid Typhus is always very grave and most frequently fatal. In a patient who has passed the forty-fifth year and whose vitality is always sapped, no matter how good the health may be, Yellow Fever is always as dangerous as it is light in childhood. I have rarely seen a patient beyond his fiftieth year recover.

Yellow Fever is like fortune, it does not love the aged, and the simplest lesion of the stomach, the liver, or especially of the kidneys, increases the gravity of the disease.

All these ideas must be well known and well classified in the physician's mind.

In each case there are two factors. First, the microbe and its toxin, more or less virulent ; second, the patient, a good or bad culture medium, according to the lesser or greater resistance of his organism.

A point to be carefully noted always is the exact hour of the outset of the disease.

Yellow Fever sometimes, say in fifteen or twenty per cent. of the cases, begins in a mild, insidious manner. The patient does not take

the bed, goes out, eats as usual; and those imprudences are disastrous, as the disease is always aggravated under those circumstances. When finally compelled to go to bed, he dates the beginning of the disease from that time. This information is incorrect, and must always be investigated carefully, for deceiving the physician may be prejudicial to the patient. The view of the case on the first day is unlike that reached on the second or third day, and the treatment varies accordingly.

DURATION OF THE DISEASE.—SUCCESSION OF SYMPTOMS.—Yellow Fever is a cyclic disease, lasting ordinarily an average of eight to ten days. The symptoms appearing at the outset become aggravated or attenuated, are blotted out and disappear, to be replaced by others.

This succession of symptoms is very important, and must be well mastered in order to avoid many errors of judgment and of treatment.

The patient's physiognomy changes from day to day, but the disease is always one, ceases not, and its morbid entity is constituted by the succession of symptoms which alone vary in intensity and duration.

There may be remissions of fever, but there is never any arrest or intermittency in the course of the disease. There may be relapses from imprudence, or from a new growth of the bacillus icteroides, but once the disease is declared and active, it terminates only in recovery or in death.

It is an affection of one paroxysm.

CHAPTER II.

SYMPTOMATOLOGY.

For the sake of clearness of exposition, the symptoms of Yellow Fever can be divided as follows :

1. Symptoms of invasion.
2. Symptoms of the disease proper.
3. Symptoms of termination.

In the first two periods the symptoms, more or less pronounced, are about the same in the light cases as well as in the serious or dangerous ones.

SYMPTOMS OF INVASION.

In seventy-five to eighty per cent. of the cases, the patient, while in full health, is seized with a severe chill over the whole surface, lasting fifteen to twenty minutes ; then an intense, scorching heat ; congestion of the head, very painful ; of the face, glossy and florid ; of the eyes, shining and injected ; of the mucous mem-

brane of the nose, epistaxis at times; of the skin, very red, burning and dry; of the liver, increase in volume; of the stomach, nausea, vomiting; of the kidneys, urine dense, scanty, febrile; of the uterus, often a bloody flow.

Cephalalgia is wearisome, oppressive, overwhelming; rachialgia is very acute, lancinating; aching of the limbs; general soreness; malaise; cardiac, respiratory, and cerebral uneasiness; burning thirst, and, according to temperament: in the plethoric, intolerable pains in the head and in the back; in the nervous and the alcoholic, incessant vomiting, agitation, delirium.

Temperature at the outset: in light cases, 102 deg. to 103 deg. F.; in moderate cases, 103 deg. to 104 deg.; in grave cases, 104 deg. to 105 deg. However, even light cases often show at the outset a temperature of 104 deg. and above.

Pulse: in children and adolescents, 130 to 140 pulsations; in adults, 120 to 130. In Yellow Fever, the pulse at the outset is strong, full, vibrating.

These figures naturally are given as average ones; for, it is unnecessary to say, Yellow Fever is not always the same, with the same

symptoms marked in the same manner; the type of the fever varies according to the temperament and the organism; in more than two thousand cases of Yellow Fever, treated during the course of nine epidemics, I have never met two alike.

The first period is specially characterized by an intense congestion of all the organs save the lungs, which nearly always remain unaffected.

The icteroid toxin paralyzes all the capillary vessels. It is in the capillaries that Sanarelli has chiefly found the pathogenic microbe.

The capillaries dilate, become engorged, and this general congestion is what characterizes particularly the outset of Yellow Fever.

SYMPTOMS OF DISEASE PROPER.

The symptoms of congestion last from forty-eight to seventy-two hours; less if the treatment has been well managed.

At the end of the second day, the cerebral congestion and the cephalalgia diminish, the head yet remaining heavy and painful during forty-eight hours; the acuteness of the pain, however, diminishes at the end of twenty-four hours, or earlier.

Often, even at the outset of the disease, the skin becomes covered with perspiration, which is a very good sign, if the sweating is not very profuse. A few patients go through the disease with the skin always moist, and they usually recover.

Vomiting persists twenty-four to thirty-six hours in children, in nervous women, and especially in the alcoholic, if the stomach is not given the most absolute and complete rest.

The redness of the skin disappears on the second day, when the latter takes on an earthy and wilted appearance. The eyes are also no longer congested, and show, in the interior of the small superficial vessels, a slight dirty-yellow tint, not to be confounded with the icteroid suffusion of the sclerotic, which rarely appears before the end of the third day.

The urine in light cases never contains albumin and becomes more abundant on the second and the third day. In the cases of moderate intensity albumin appears on the second or third day, to the extent of ten or fifteen per cent.; in the grave cases, with high temperature, albumin is detected after fifteen or twenty-four hours, and increases daily with the gravity of the disease. The quantity varies, however,

reaching ten, twenty, fifty, and even seventy-five per cent.

The temperature falls, in the light cases, defervescence being accomplished in a regular manner. In the moderate cases the fever shows during two, three, even up to five days, light remissions in the morning, and slight exacerbations at night. In the grave cases, the temperature is at the outset, or soon reaches 104 deg. and 105 deg. It remains during the first two days constantly between 104 deg. and 105 deg.

The pulse decreases always, at the time of each visit, in all cases of Yellow Fever. If it does not decrease, which is the rule, it remains stationary, which is the exception, the temperature rising at the same time by one to three or even four degrees.

SYMPTOMS OF TERMINATION.

When the patient is to recover, all the symptoms improve, vomiting ceases, the pains disappear, the urine increases in quantity, albumin diminishes or disappears; the fever, on the fourth and fifth days, falls continuously and regularly. In the moderate cases, defer-

vescence occurs step by step, elevation of fever at night, remission in the morning, until the sixth or seventh day, when the temperature becomes normal or even subnormal.

Sleep returns ; the appetite awakens, becoming at times voracious ; beware of satisfying it. And the disease is blotted out, disappears little by little, silently, leaving behind only a slight icterus in the light cases, pronounced in the moderate.

All danger is past. There remains only a great weakness and a slowing pulse, which always becomes slower and slower, even during the first days of a well established convalescence.

At times, toward the end of the disease, profuse and critical cold sweats accompany an alarming state of collapse, which, however, passes away rapidly upon appropriate treatment—horizontal position, lowering of the head ; some hot black coffee, aromatized with a tablespoonful of rum or of whiskey, and frictions with spirits of camphor or hot vinegar.

In the grave cases, icterus appears at the beginning or the end of the third day ; the sclerotics are slightly suffused ; thence, it involves the face and all the body, increasing in

intensity toward the fourth day, changing from a pale to a light yellow, a bright yellow, a greenish yellow, a mahogany yellow.

The gums, at the beginning of the third day, appear swollen, tumefied, of a wine colored or leaden hue. The slightest pressure starts them to bleed; on the fourth day, and on the following days hemorrhage from the gums continues.

The eyes become hollowed and assume an expression of heartrending sadness, or of wild fright.

The *facies* is changed, the nose is pinched and bleeds also.

The stomach, tender on pressure, contracts from time to time to eject a black liquid matter full of stringy mucus, and from which settles digested blood resembling a strong infusion of parched coffee (coffee grounds). At times the blood is almost pure and in large quantity. At others the vomit consists of thick mucosities, dotted with dark spots resembling chopped-up fly wings.

Epigastric and abdominal pains cause the patient to cry out. The stools are black, bloody, very frequent, and of a cadaveric odor. The urine is suppressed, or very scanty, a few

spoonfuls, or a few drops, in twenty-four hours. Upon heating, the entire urine thickens and forms a coagulum.

All the mucous membranes may bleed.

The temperature falls rapidly, perpendicularly on the chart, falling 8 to 10 deg., down to 96 or 95 deg.

The pulse becomes faint, thready, and can not be counted.

Cold, clammy sweats.

Petechiæ, ecchymoses in large patches.

Often convulsions; subsultus tendinum; hic-cough, which is very painful and persistent; coma; and finally death, which puts an end to the tortures of the patient.

No other disease presents such a heartrending, poignant, and terrifying finale as Yellow Fever, mainly because it kills the young.

Death due to an overwhelming infection by the icteroid toxin is produced by the profound alteration of the blood; by the fatty degeneration of the liver, of the kidneys, of the heart, of the capillary blood vessels; and by hemorrhage of the mucous membranes of the nose, the mouth, the stomach, the intestines, and the womb.

Everything was congested at the outset, everything bleeds at the end!

A mixed infection acts mostly on the kidneys, hence the patient dies, nearly always vomiting black, it is true, but from the uremic accidents: respiratory interference, suppression of urine, convulsions, and coma, come to the front.

It is, however, very difficult to differentiate clinically between the infections, which are most often combined.

The cadaver is always yellow, the tint becoming brighter after death. The dependent portions of the body are nearly black, and the skin is mottled with ecchymotic patches.

Has the diagnosis not been made during the course of the disease, death presents it in ineffaceable and never to be forgotten characters.

Nothing is more difficult than to describe and expose in a clear and succinct manner all the symptoms of Yellow Fever, which offer so many variations, in intensity mainly, according to whether it be benign, grave or fatal.

I shall take up again the principal symptoms, bringing them out in relief according to their importance, in order to enlighten the diagnosis, facilitate the prognosis, and guide the treatment.

This will be the chief object of my labors.

I shall, with the aid of numerous clinical observations, thoroughly study the curves of the temperature and of the pulse, which furnish within the first seventy-two hours the pathognomonic diagnostic signs of Yellow Fever.

FULMINATING INVASION.

Yellow Fever in seventy-five per cent. of the cases strikes like lightning. On September 7, 1866, having made numerous visits in the morning and breakfasted with excellent appetite, I was suddenly taken with an intense, nay, an icy chill, which led me to believe that my last moment had come. Taking my temperature, I found it to be 104 deg.

In 1867, I was called to a butcher, aged 56, and an alcoholic, who, otherwise in good health, had been taken at the French Market with such an intense chill that he had fallen to the pavement; I saw him twenty minutes after the initial chill, his temperature was 105 deg.

In the other twenty-five per cent. of the cases, the disease is ushered with less of a crash: a few hours of malaise; light chills; sensation of cold in the feet and along the spinal column; then fever, nausea, vomiting.

CEPHALALGIA.

Cephalalgia always exists and is acute, crushing, lancinating. In the plethoric with high fever, it overwhelms and throws the patient into an agitated somnolence.

This headache, which is supra and infra-orbital, is of a throbbing character through the cranium, and has exacerbations provoked by the least movement, and especially by vomiting or retching. "My head is bursting," says the patient. The congested and sensitive eyes can not bear the light; the acuteness of the cephalalgia lasts from fifteen to twenty hours.

RACHIALGIA.

The pains are more intense and exacerbating throughout the region of the kidneys. They are comparable to severe lashes across the back; to pointed, red-hot irons sunk into the flesh; to blows with a club, sufficient to break the bones.

The patient, when the nausea or the vomiting allows a moment of respite, has strength only to utter the continuous lamentation: "Oh! my head! Oh! my back!"

NAUSEA AND VOMITING.

Nausea and vomiting begin immediately at the outset of the disease, especially if the stomach is full. My breakfast of 1866 did not remain in my stomach five minutes.

The vomited matter consists of food, bile, mucus. Vomiting indicates gravity when it is incoercible and lasts more than twenty-four hours. When the stomach is empty, the spasmodic contractions are much more painful, and the suffering in the epigastrium to a marked degree depresses the patient, on whom the perspiration rolls down in large drops.

While this spasmodic state of the organ lasts, the stomach tolerates no medication; the latter is rejected as soon as taken. The pains produced by the nausea and vomiting fatigue the patient to a pronounced extent. They usually last from twelve to twenty hours; their intensity is influenced by the nervous condition, anterior lesions of the organ, and especially by the elevation of the temperature.

The initial chill in full health; the sudden outset of a high fever; the rapid congestion of all the organs; the cephalalgia; the rachialgia; the vomiting, form a group of symptoms

which should always cause us to suspect this disease in a city where there has already been, or may yet be, or where there perhaps is Yellow Fever. If the epidemic is already declared, the suspicion turns into certainty.

However, a positive clinical diagnosis can be established only by careful observations of the pulse and the temperature.

HEMORRHAGE.

There are symptoms in Yellow Fever which give rise to a different interpretation as to gravity, according to the period at which they occur.

From the fact that an erroneous interpretation may give rise to fears of a danger which does not yet exist, we must always bear in mind the exact day and hour of the outset of the disease, and know thoroughly, as well, on which day of the disease such and such a symptom ordinarily appears.

For prognostic purposes, especially, there are in Yellow Fever two kinds of albuminuria and two kinds of hemorrhage—albuminuria or hemorrhage from congestion, albuminuria or hemorrhage from infection. Hemorrhage of

congestion is epistaxis, in both sexes, and metrorrhagia in young girls and young women. These symptoms at the outset, like the moderate perspiration, are most frequently favorable. They act as a safety-valve, but epistaxis may give rise to an error of judgment against which one must guard. Sometimes bleeding at the nose may occur five or six hours after the outset of the disease, during the period of the most active congestion. Owing to intense cephalalgia, the patient remains on his back; the blood, not flowing completely from the anterior nares, runs down the posterior nares, is swallowed into the stomach, and the same day or the morrow, even on the third day, as I once observed, black vomit occurs. Anxiety is produced, a grave symptom is thought to have occurred. In order correctly to appreciate the prognostic value of this vomiting, it must be remembered that true infectious black vomit very rarely occurs before the third day, and that, most frequently, it occurs on the third day only in the excessively virulent cases. It is mainly on the fourth and fifth day that it is noticed.

I have seen, once only, black vomit appearing at the end of thirty-six hours. It was in

the case of the butcher of whom I have already spoken. Four or five hours after the initial chill, his urine contained fifty per cent. of albumin, and he died forty-two hours after the seizure. His was the most acute case I have ever seen, but he was fifty-six years old and an alcoholic.

Therefore, knowing the exact hour of the outset of Yellow Fever, should black vomit occur on the first or second day, you may be reassured and certify that the blood does not come from the stomach, but from the nose; you can also certify to it on the third day as well, unless the general condition be excessively bad.

Epistaxis is likely to occur especially in children and adolescents, and I consider it as of good augury, particularly if it be of short duration and does not recur.

Hemorrhage from the gums is a symptom almost contemporaneous with true black vomit, hemorrhage from the stomach. It, however, at times precedes the latter by twelve hours; but the tumefaction and the bleeding of the gums are grave symptoms, precursory of black vomit.

You must be on your guard also when you

see blood in the mouth on the first or second day. This blood may come from the nose or from an alveolar hemorrhage, following the extraction of a tooth one or two days previous. I have observed two such cases. If the gum itself bleeds, you can, by careful examination, see the blood ooze. The gums rarely bleed on the first or the second day.

Bleeding of the gums, black vomit on the third and fourth day; sanguinolent extravasations in the cellular tissues on the fifth and sixth day or earlier, always indicate a dangerous virulence of the disease. These hemorrhages are always accompanied by icterus, a fall of temperature, and a feeble, thready pulse, which can not be counted.

If the patient is young, not an alcoholic and, especially, if he continues to urinate, even very scantily, all hope of recovery is not to be lost.

Black vomit occurring on the third day and even on the fourth is nearly always fatal. It is always a very alarming symptom, but the later it appears, the less bad the prognosis. The recurrence of black vomit is very significant; some patients having black vomit once or twice recover. Occurring in children and in young women black vomit is certainly of less

gravity. In 1878, of the eleven children among my clientèle who had black vomit only two died.

ICTERUS.

Icterus is nearly always of biliary origin, but Sanarelli believes that in the cases in which the reaction for biliary pigments is not obtained in the urine, the characteristic straw-colored pigmentation of the skin must be due to an ulterior oxidation product of the coloring matter of the blood impregnating the tissues. In such cases the icterus would be hematic in character.

Icterus first appears in the conjunctiva; a light yellow suffusion shows itself in the grave cases at the beginning of the third day, increasing in intensity day by day, reaching the face, then the entire surface of the skin. We must not mistake for icterus on the first two days the dirty yellow color noticed in the capillaries of the conjunctiva, which is only a relic of the active congestion of the outset, a fatty degeneration of the endothelial cells. The icterus varies greatly in intensity and appears in nearly all cases, since it is from this symptom that the disease has been named. The yellow

SYMPTOMATOLOGY.

is often light and lemon-like; of the most grave prognostic sign is the greenish yellow, the mahogany yellow, the latter nearly always fatal, especially if it appears on the third day together with black vomit.

The icterus indicates the degree of lesion of the hepatic cell. Sometimes on the sixth or seventh day it becomes very intense, unaccompanied by black vomit, the urine remaining abundant though albuminous, and the patient recovers. I have often wondered if in these cases there was always a fatty change in the hepatic cell, and if sometimes the icterus was not produced by fright and by a reflex contraction of the biliary ducts such as in cases of pronounced emotional jaundice.

We must never weigh the meaning of the jaundice alone, a fact holding good with the other symptoms of Yellow Fever.

The general rule is the later and lighter the jaundice the less serious the disease.

THE URINE AND ALBUMINURIA.

The physician attending a patient ill with Yellow Fever must never lose sight either of the general condition—that is, of the symp-

tomatic *ensemble*, which is of prime importance, nor of the functional condition of the stomach or of the kidneys, or of the degree of temperature.

During the entire course of the disease the urine must be investigated, measured, analyzed. The quantity of urine voided in the twenty-four hours must be noted daily. The urinary secretion must be just as carefully and minutely observed as the pulse and the temperature. In Yellow Fever the night glass may yield just as useful indications as the watch and the thermometer.

The kidneys play an important part in Yellow Fever. As in all infectious diseases, the toxins are eliminated chiefly by the kidneys, and any lesions produced in those organs by the toxins which may modify, diminish, or arrest secretion, contribute even more than black vomit toward a fatal termination.

It is exceedingly rare that a patient voiding a pint or more of urine daily should die of Yellow Fever.

From the standpoint of prognosis, it is most important to know the amount of urine voided in twenty-four hours. The quantity is more important than the quality.

A medium amount of excretion, beyond one pint on an average, is favorable; an abundant quantity is a sign of recovery; very abundant, two to three pints, means the certainty of a happy termination. Scanty urine—grave prognosis, anuria—death.

The urine in Yellow Fever is always acid, very acid. When it contains bile it has the characteristic color.

It sometimes happens that urine is secreted but that a pseudo-paralysis of the bladder prevents the voiding of it. Twelve hours should never be allowed to elapse without catheterizing the patient if he has not urinated. Frequently, three-quarters of a pint of urine may be drawn. Even in very grave cases, catheterize. If you find the bladder empty, your prognosis will be enlightened; and if you find it full, all hope will not yet be lost.

The quantity of urine voided in twenty-four hours, and the amount of albumin it contains, are the best guides to the anatomo-pathologic condition of the kidneys. Nephritis is consecutive to the icteroid intoxication and, according to the magnificent experiments of Sanarelli on animals, the renal parenchyma is always,

next to the hepatic parenchyma, the most seriously affected by the specific toxin.

From the clinical standpoint, there are in Yellow Fever congestive and infectious albuminuria, just as we have congestive or infectious hemorrhages.

When the fever is very high at the outset of the disease, between 104 deg. and 105 deg., and the symptoms of congestion are very pronounced, the urine contains at the first or second analysis, on the first or second day, from five to fifteen per cent. of albumin. This albuminuria indicates a serious condition only if the fever and the congestive symptoms do not yield. Frequently, at the end of forty-eight hours, the temperature having lowered and the congestion diminished, albuminuria diminishes or disappears. This form of albuminuria, of frequent occurrence in such cases, is due to congestion, to a passing glomerulitis which is noticed in many other infections with high fever. In the serious cases, however, to this congestive albuminuria is soon added an infectious albuminuria, which is produced by lesions of the parenchyma; fatty degeneration, alteration in the capillaries, blocking up of the tubules by epithelial and hyaline casts. According to

Sanarelli, who has investigated all these lesions with a master mind, the glomeruli present some vessels denuded of epithelium, and there are interstitial hemorrhages.

The amount of albumin increases on the third or fourth day, and can reach thirty to fifty per cent. and more. The scantier the urine, the more albuminous it is.

During the epidemic of 1897 I saw, in consultation, a girl of fourteen on the third day of an apparently mild attack of Yellow Fever. Her urine, though copious, contained a large proportion of albumin, fully fifty per cent.; the next day there was seventy-five per cent., the other symptoms presenting no gravity and giving no explanation of this anomaly. Upon questioning the family, we learned that this child had at the age of nine been treated by me for a severe case of scarlatina. She had recovered completely from the scarlatina, but evidently her kidneys had been damaged by the scarlatinal toxin and the icteroid toxin, adding its effects to those of the anterior lesion, explained this excessive albuminuria. The patient made a perfect recovery, the albumin disappeared, but I am convinced that renal lesions remained and are likely to develop

slowly and to compromise her health at some future date. She will be subject to renal troubles.

This fact is cited to demonstrate how important it is to know the past pathological condition of a patient attacked by Yellow Fever.

PULSE AND TEMPERATURE.

The sudden outset, the chill, the fever, the congestion of all the organs, the cephalalgia, the rachialgia, the icterus and black vomit, when grouped, characterize icteroid typhus, but each one of these symptoms is met with separately in other infectious diseases.

The symptom which alone best characterizes Yellow Fever, and which has been observed in New Orleans ninety-nine times in a hundred, and which is not found at the outset of any other febrile affection, is the PROGRESSIVE FALL OF THE PULSE RATE.

This fall of the pulse consists in the fact that at a given visit you do not find the same number of pulsations which you had counted at the preceding ones.

During the first three days of Yellow Fever, each time the pulse is taken a smaller number of pulsations is noted.

The pulse rate is falling.

If at your first visit you have noticed one hundred and twenty pulsations, you will have one hundred and ten at your second, one hundred at the third, ninety at the fourth, and so on, with more or less regularity during the first three days of the disease.

At times, the number of pulsations remain the same during twelve or twenty-four hours if the fever is very high, or if the fever rises, especially in children, in nervous people, and in the alcoholic, but the lowering of the pulse occurs later, is accentuated, and becomes as characteristic as if there had been no arrest in the fall. Notwithstanding slight variations, the progressive fall of the pulse in Yellow Fever is, during the first seventy-two hours, an almost absolutely pathognomonic law. In over two thousand cases of Yellow Fever which I have treated, I have nearly always observed it.

Naturally, in order to obtain a correct observation of the pulse, it must not be counted just as the patient has risen or moved about actively, or has made efforts at vomiting. The patient must have been lying down and at rest during eight to ten minutes. Under such cir-

cumstances you will be able to observe the fall in the pulse rate during the first three days. All physicians know that the pulse does not beat at the same rate whether the patient is lying, sitting, or standing.

It is also necessary to allow sufficient time for the patient to recover from the nervous impression and the acceleration in the heart's action often produced by the physician's visit. The medical pulse, especially in nervous subjects, is not the true pulse.

This fall in the pulse rate had been noticed by physicians of the last century and of the beginning of this century, who had treated Yellow Fever in the West Indies, in New York and in Philadelphia, but not one of them had understood its importance and brought out its diagnostic value, so that this constant and typical phenomenon has not obtained a marked position along with icterus and black vomit.

Upon reading Yellow Fever observations of that time, if the pulse has been counted at each visit, a manifest fall of the pulse rate is always noted. Delmas, in his treatise on Yellow Fever, 1822, describes the phenomenon perfectly, having observed it without, however, having gen-

eralized it or drawn from it any practical conclusions.

To Dr. Charles Faget, a very distinguished physician of New Orleans, is due all the honor of having studied the course of the pulse and having promulgated the law of its fall in Yellow Fever.

After the epidemics of 1853, 1858, 1867, 1870, 1873, he called attention to the importance of the study on the part of physicians of the pulse in Yellow Fever; by the lucidity of his teaching and the large number of his published observations he made of the fall in the pulse rate during the first days of the disease one of the indispensable diagnostic signs.

This phenomenon, which is met with only in Yellow Fever, should never be forgotten by physicians during epidemics.

In all febrile infectious diseases the pulse and the temperature are always in correlation; if the fever rises, the pulse rate increases; if the temperature diminishes, the pulse rate falls; hence another phenomenon still more forcible and demonstrative than that just mentioned is that, in Yellow Fever, the temperature often rises one to four degrees, even while the pulse continues to fall.

It is this divergence between the falling pulse rate and the rising temperature which is Faget's law, a wonderful law, unfortunately little known, and which, in the congestive period of the disease, is the pathognomonic diagnostic sign of Yellow Fever, just as characteristic as are icterus and black vomit during the period of infection.

Upon coming to New Orleans to practise medicine in 1865, I had a clinical thermometer in my baggage. I believe that I am one of the first physicians in the United States to have utilized this precious instrument in the diagnosis of fevers. I am sure I was the first in New Orleans to have used it for the study of the march of temperature in Yellow Fever during the epidemics of 1866, 1867 and the following ones. Hence, I was one of the first to note this divergence between the pulse and the temperature in Yellow Fever; but it is Dr. Faget who, with his observations and mine, built up the magnificent law which bears his name in all justice, as it is he who first caused it to be known to the medical public by his remarkable treatise, "*Monographie sur le type et la spécificité de la Fièvre Jaune, établis avec l'aide de la montre et du thermomètre,*"

which is a masterpiece of originality and of science and judgment.

It is now over twenty-five years since this law has been promulgated; yet, notwithstanding the fact that it remains unshaken, and that its importance and value are of the highest order in enabling the making of a positive diagnosis on the first or second day, it is yet very little known; in the numerous works which have been published within twenty-five years, it is mentioned, but it does not occupy the place it deserves, and is yet completely ignored by some physicians who treat Yellow Fever. I shall try to demonstrate again, with the assistance of clinical charts of the pulse and the temperature, the importance of the fall in pulse rate and the lack of correlation between the pulse and temperature as aids to an early and positive diagnosis of Yellow Fever.

This is a nail requiring to be driven into the medical head.

CHAPTER III.

FALL IN THE PULSE RATE—FAGET'S LAW— CLINICAL CHARTS OF THE PULSE AND TEMPERATURE—TYPES AND VARI- ATIONS OF YELLOW FEVER.

OBSERVATIONS.

The charts of the pulse and temperature which I shall pass under the reader's eye, whilst commenting upon and explaining them, have been selected as the most typical among several hundred complete observations which I collected during nine epidemics in my private practice and at the Hospital of the French Benevolent Society of New Orleans, whose physician in chief I was during twenty years.

In order that the physician may draw from these curves the most profitable teaching, I shall, in their exposition, begin by the mildest cases, showing, as we go, the variations which can be observed; we will follow with the cases of average intensity, with the grave ones, the very grave, and the fatal.

This collection of pictures will include the different types of Yellow Fever observed by me, the most frequent as well as the most rare ; they will show also that, just as the symptoms of Yellow Fever vary ordinarily only in intensity, so do the curves of the pulse and the temperature retain, even in their numerous variations, a family air, an easily recognized physiognomy, one especially difficult to confound with the clinical curves of any other febrile infectious disease.

In studying and comparing these curves, the physician will have, I hope, a clean cut and clear idea of Yellow Fever; he will be able to make a good diagnosis within the first thirty-six hours, at the beginning of an epidemic, even if he has never previously seen a case of it, knowing its symptoms, so characteristic at the outset, and knowing their succession and, especially, the fall in the pulse rate and the typical lack of correlation between the temperature and the pulse.

The course of the temperature, the height of the fever, its exacerbations and remissions, indicate, during the first three days, much better than any other symptom what is likely to be the termination.

Especially during the first three days, the temperature must be the physician's autocratic guide in the treatment.

Temperature and virulence are most often united, whether the temperature rises in the period of congestion, or whether it falls in the period of infection.

In these clinical notes I have often used the two expressions, period of congestion and period of infection, in order to render as clear as possible the symptomatic exposition of the disease; but it must be well understood that the pathogenic element, the bacillus icteroides and its toxin, is the same in both periods.

In the congestive period the organism is battling with intense reaction against the invader and its poison; in the infectious period, the germ has already produced cellular lesions and functional troubles.

The period of congestion is the battle, which ordinarily lasts three days; the period of infection is that of defeat, but the organism, although wounded, is not yet *hors de combat*, and even in the most grave cases, can yet retrieve its fortunes.

In order to be a useful ally to our patient we must never forget to count the pulse and

to take the temperature twice a day—in the mouth for adults, in the rectum with children. Let each patient have his thermometer.

I believe it important to say once more, as my charts prove it, that the fall of the pulse, which is so constant, so useful in the diagnosis, is a phenomenon of the period of congestion, of the first three days of the disease.

Sometimes this fall continues during the entire disease, especially in the light cases, in those of medium intensity, and even in the very grave ones, but the general rule is that it ceases after the third day.

The variations of the pulse without being very accentuated are then very manifest after the third day. The number of pulsations is not as high as at the outset, but the pulse is variable, for it no longer is influenced only by the ictteroid toxin. On the third day the organic situation is no longer the same. The toxin has produced cellular lesions; fatty degeneration; the kidneys, the liver, and the stomach are affected and their functions are no longer properly carried out or are entirely arrested.

Other microbes, the streptococcus, the colon bacillus especially, the proteus, and so forth,

finding a good culture medium, add their toxins to the yellow toxin and create secondary infections.

The urinary purification not being carried on properly, the liver no longer destroying the toxins of the intestines and the ptomains, the organic poisons accumulate and create an auto-infection which becomes added to the infection of the icteroid toxin and that of the other microbes.

The infection has now become mixed and the icteroid toxin no longer reigns alone in the organism as during the first three days of the disease.

It is certainly these secondary infections and auto-infection which modify the pulse and render it variable, for in the cases of pure Yellow Fever, without pronounced nephritis, with abundant urine, the progressive fall of the pulse rate continues until death.

The fall of the pulse, then, is most particularly a symptom of the first three days, and this is one of the facts confirming the importance which I claim for the knowledge of the exact hour of the beginning of the disease.

In the observations which accompany my clinical charts I shall give only the interesting

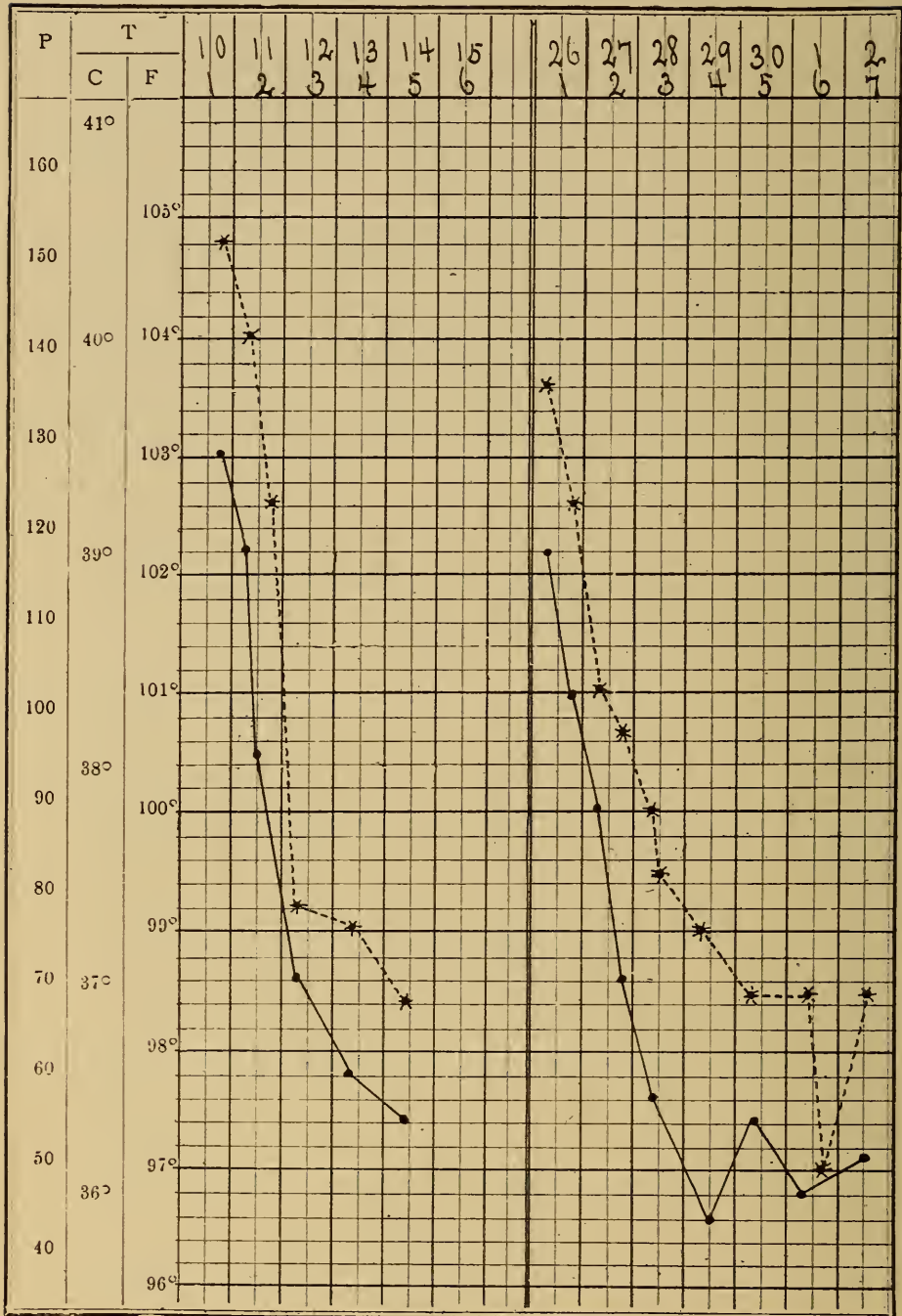
details of the disease, not forgetting that it is chiefly the fall in the pulse and the divergence between the pulse and the temperature which I desire to demonstrate.

I shall publish a few complete observations, illustrating typical cases only, not desiring to load this work with details fastidious in their repetition and remembering that this clinical monograph is to be read chiefly by physicians.

Type: Mild Yellow Fever.

No. 1—SEPTEMBER, 1878.

No. 2—SEPT. AND OCT., 1897.



Recovery.

Recovery.

OBSERVATIONS NOS. 1 AND 2.

In these charts, the dotted lines indicate the curves of the temperature, the straight lines those of the pulse. The first line of figures gives the date of the month, the second, the day of the disease.

Clinical Charts Nos. 1 and 2, are charts of the very light Yellow Fever of children and of adolescents. It is the form which is observed at least seventy-five times in a hundred in the Yellow Fever of children, fifty times in a hundred in adolescents, and twenty-five times in adults, who are perfectly sound and without organic taints. This is what is called acclimating fever, and which I call a caress bestowed by Yellow Fever. Even such a benign attack gives immunity to the patient, vaccinates and protects him against any further attacks.

No. 1 was a child aged 6 years; No. 2 an adolescent 17 years old.

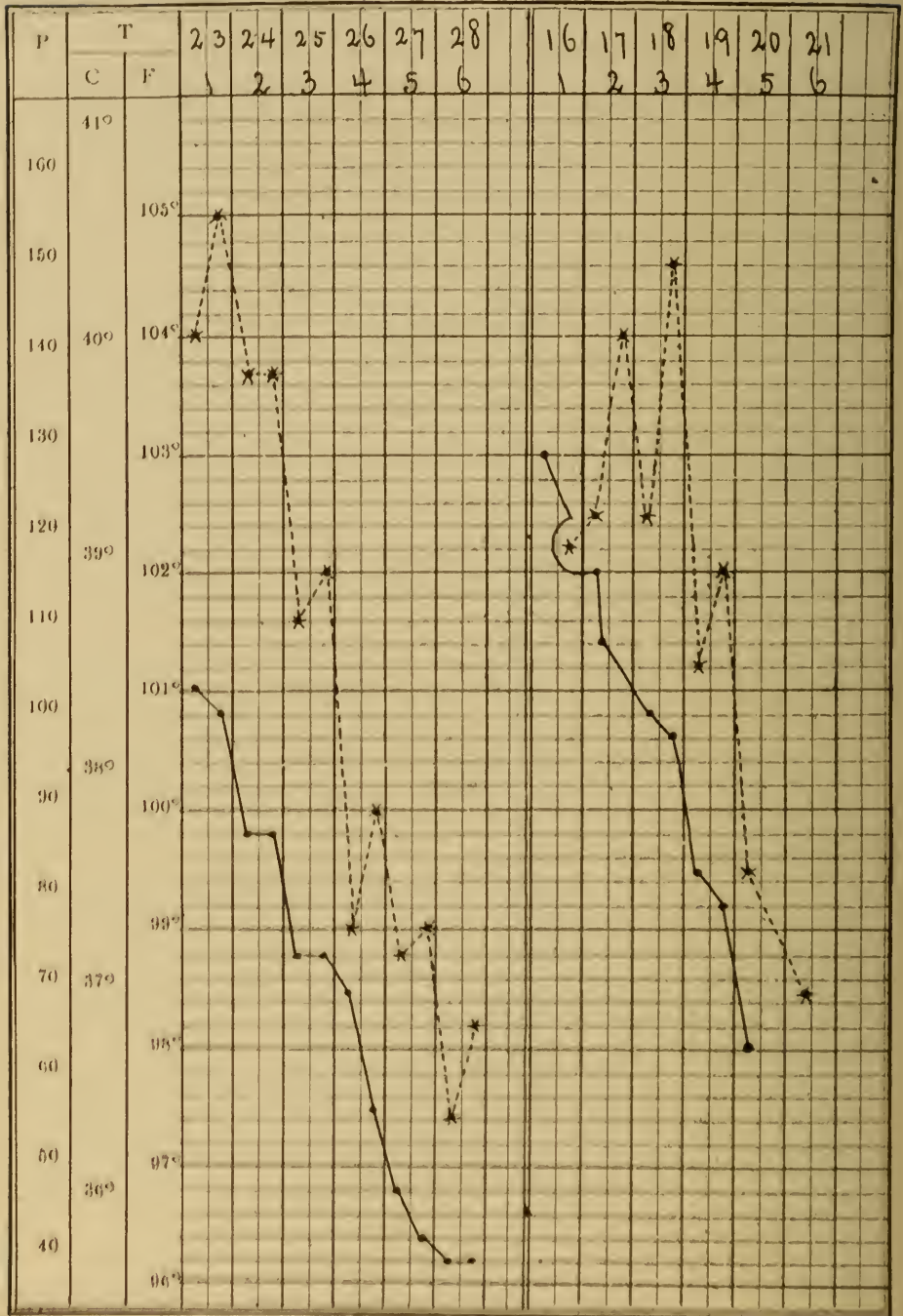
In both cases the disease began, the patient being in full health, by a chill, congestion of the face, intense cephalalgia, very painful rachialgia, the vomiting of aliments, in the child whose case is recorded in Chart No. 1, it having been taken sick right after supper, and nausea only in patient No. 2; light epistaxis.

The fever at the outset was very high, reaching nearly 105 deg. in No. 1. The progressive fall in the pulse goes on without interruption, the number of pulsations and the temperature falling continuously, giving us parallel lines on the chart. The fall and defervescence are in perfect harmony. The pulse of patient No. 2 fell to 50 and he became collapsed and almost in a state of syncope. In both cases a light icterus was noticeable in the sclerotic. Great weakness. No albuminuria. Duration five and six days. Recovery,

Type: Mild Yellow Fever.

NO. 3—JULY, 1878.

NO. 4—SEPTEMBER, 1878.



Recovery.

Recovery.

OBSERVATIONS NOS. 3 AND 4.

Adults aged 26 and 21 years, respectively.

In Charts Nos. 3 and 4 the fall of the pulse is manifest from the outset of the disease up to convalescence, but in Case No. 3, on the second and third day, the number of pulsations remains stationary during twelve hours, but does not increase. This stationary condition is sometimes observed when the temperature rises, or when it remains stationary at a high degree of elevation; this does not violate the law of the fall of the pulse. In Chart No. 4 the fall is progressive and without intermission.

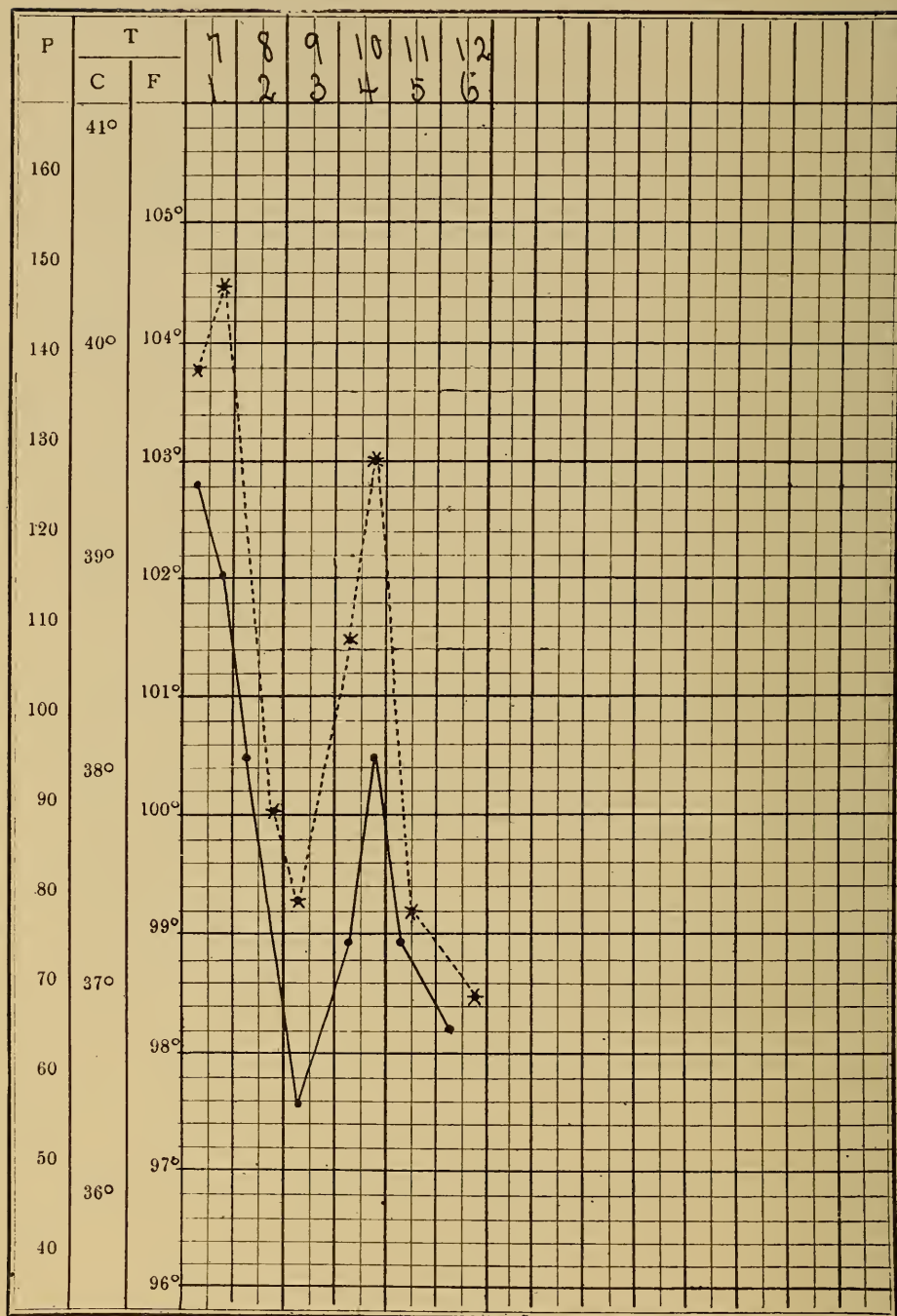
Remarkable points are that in Chart No. 3 the temperature rises by a degree, while the pulse is lowered by five pulsations. In Chart No. 4 the temperature rises on the second day nearly two degrees, and on the third day two degrees; yet, notwithstanding this rise of fever in two days of nearly four degrees, the pulse decreases uninterruptedly by thirty-five pulsations.

This phenomenon is observed only in Yellow Fever, is observed in nearly all the cases and is pathognomonic. It is this lack of correlation between the pulse which falls and the temperature which rises that constitutes Faget's law.

Very high fever in Case No. 3, 105 deg., which is a dangerous temperature. In both cases sudden outset; chill; congestion of the face and eyes; very intense cephalalgia in Case No. 3, with vomiting; rachialgia; light congestive albuminuria; light icterus. Duration of the disease, six days; recovery.

Type: Mild Yellow Fever—Complication.

No. 5—OCTOBER, 1897.



Recovery.

OBSERVATION NO. 5.

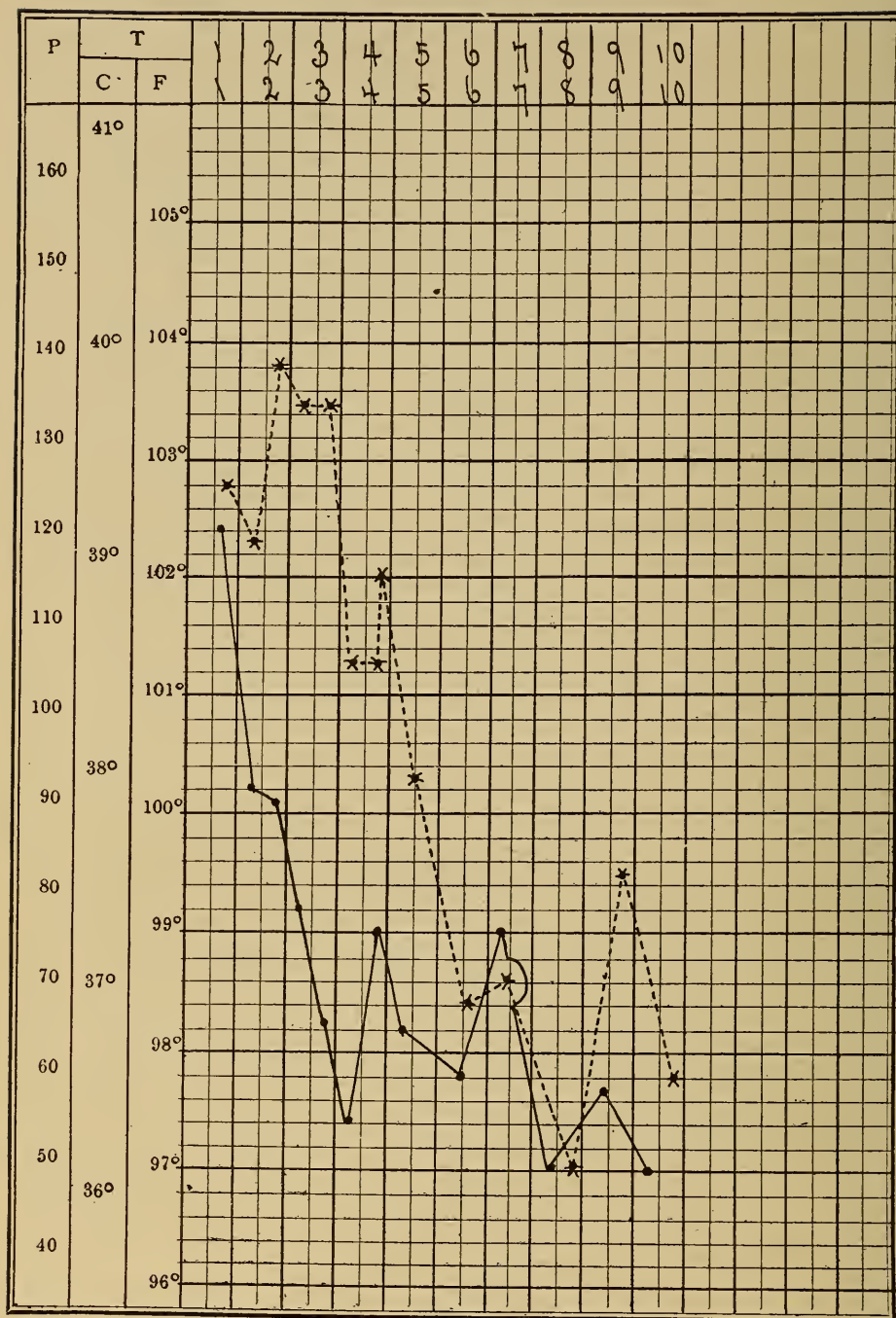
This young girl, aged 16, of a nervous temperament, but good constitution, was taken sick in full health, at four o'clock on the morning of October 7, 1897; intense chill, violent headache, pronounced rachialgia, vomiting, malaise and high fever, face much injected, eyes congested and brilliant.

During the first three days, the fall of the pulse is uninterrupted and progressive; on the first day, notwithstanding a rise of .6 of a degree, the pulse is lowered by ten pulsations—Faget's law. On the second and the third day the pulse and the temperature fall in parallel lines. The general condition good, stomach quiet, the patient is drinking only Vichy water, Célestins, cold, and as much as she desires. The urine was very abundant and free of albumin so that I considered convalescence as established when, on the night of the third day, the pulse and the temperature both rose; the pulse in twenty-four hours by forty pulsations; the temperature 2.7 deg. I was fearing a recrudescence of the disease when the menses appeared and explained the reason for this alarm.

The menses often show at the outset of the disease, even if the period is not due, being produced by a uterine congestion with hemorrhage of the same nature as in epistaxis. During the outset of the disease, as shown by this observation, this complication sometimes causes a rise of temperature. Apart from the fever, the general condition was very good. Defervescence was uninterrupted and, on the sixth day, pulse and temperature were both normal. Profuse sweats occurred on the fifth day. Recovery.

Type: Yellow Fever of Moderate Intensity.

No. 6—OCTOBER, 1897.



Recovery.

OBSERVATION NO. 6.

Child 14 years old, nervous, of weak health, taken suddenly, while as well as usual, with a chill ; fever ; prostrating pains in the head, and very acute pains in the back ; vomiting ; light delirium.

Chart No. 6 is remarkable for the uninterrupted and progressive fall of the pulse during the first four days. The temperature rises one deg. on the second day, the pulse losing four pulsations. The third day the fever remains stationary and high, 103.5 deg., the pulse falling by twenty-three pulsations. Faget's law is well shown.

The urine remained abundant throughout, but became albuminous on the fourth day.

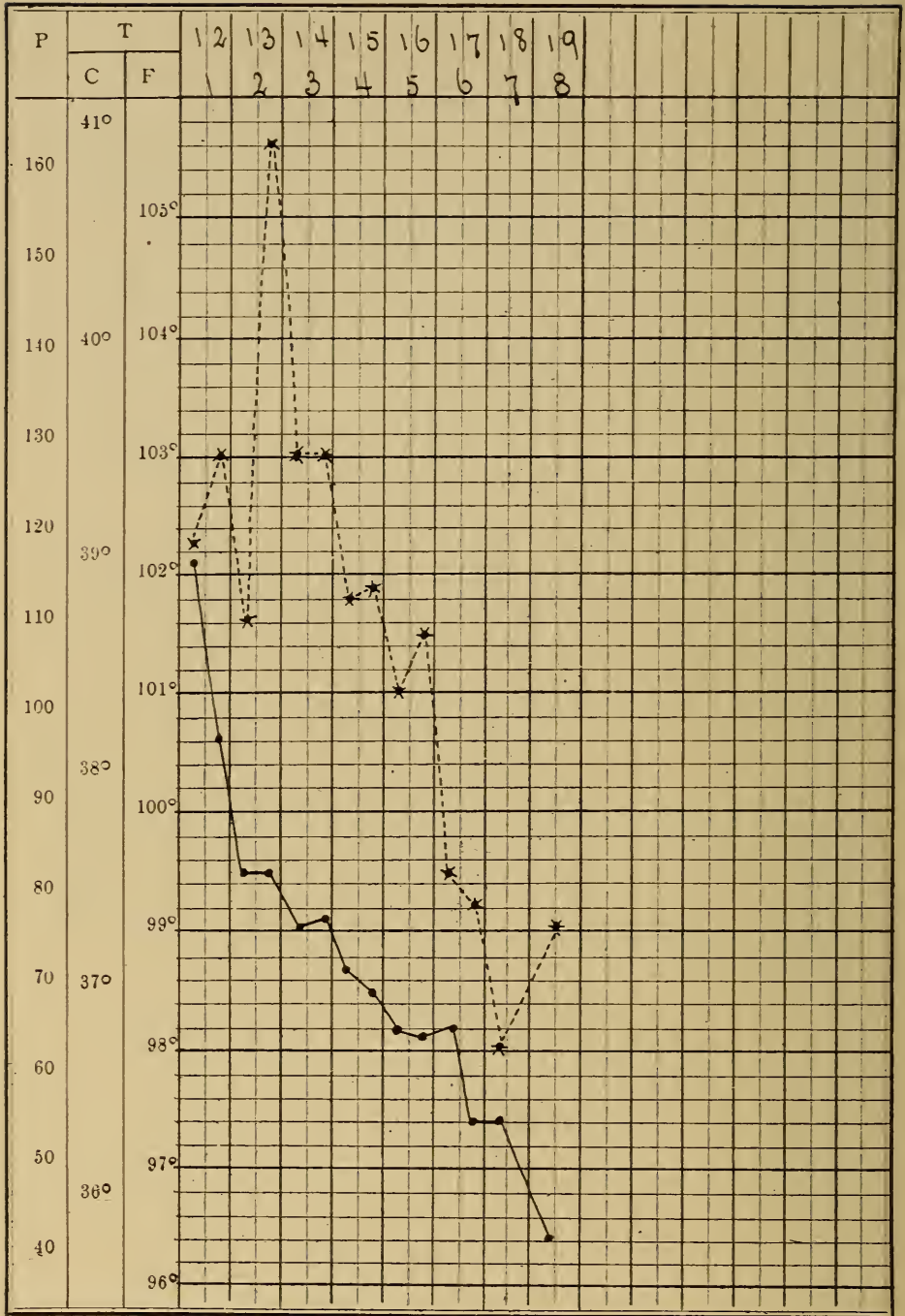
There were slight variations in the pulse rate and in the fever on the fourth, fifth and sixth days, but, notwithstanding a light icterus and a lack of sleep, the general state was satisfactory.

The albumin disappeared on the eighth day, and the young man was convalescing after nine days' illness.

On the ninth day a little light solid food caused a rise of temperature. This nearly always happens ; solid food during convalescence always causes slight fever. It is the *carnis fever* of the ancients. Duration of the disease, nine days. Great weakness during fifteen days. Recovery.

Type: Severe Yellow Fever.

No. 7—JULY, 1878.



Recovery.

OBSERVATION No. 7.

Male, 30 years old.

Chart No. 7 is exceedingly remarkable and is unique among my observations. It is a pure case, consequently a good demonstration of the fall in pulse rate and especially of Faget's law of lack of correlation. The fall in the pulse is progressive and uninterrupted during the entire eight days of illness, and the pulse falls to forty-six pulsations.

An extraordinary thing is that the pulse remains stationary during twelve hours on the seventh day, at eighty-five pulsations, while during the same time the temperature rises from 101.6 to 105.6 deg. It is this enormous divergence between the temperature which rises four degrees and the pulse which falls or is stationary, as in this case, which is the pathognomonic diagnostic sign of Yellow Fever. It is Faget's law.

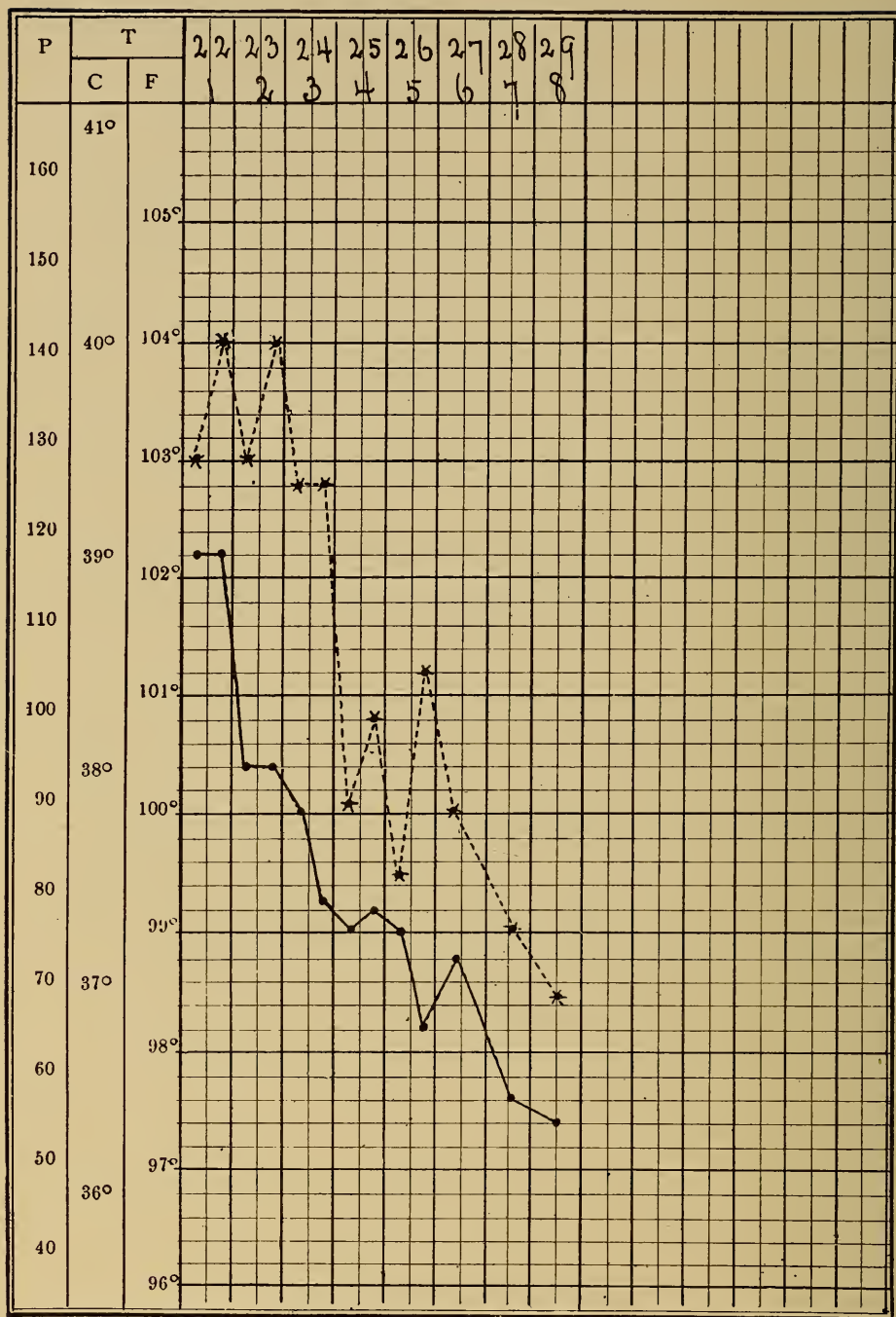
This patient recovered, having had congestive albuminuria and icterus. As a rule, adults whose temperature during the first two days reaches 105 and still more 106 deg., nearly always die.

I produced defervescence by means of continuous cold sponging during several hours, by the administration in abundance of Vichy water and of infusion of digitalis: digitalis leaves, fifteen grains; boiling water, eight ounces; tr. of veratrum viride, four drops.

The feebleness lasted a long time, a proof of the virulence of the disease. Recovery.

Type: Yellow Fever of Medium Intensity.

NO. 8—OCTOBER, 1870.



Recovery.

OBSERVATION NO. 8.

This young man, aged 21, vigorous and rather temperate, is taken with an intense chill whilst in full health; repeated vomiting; severe cephalalgia; rachialgia; general pain; restlessness and uneasiness.

On the first day the pulse remains stationary at 120, the temperature rising one deg.; the fall in pulse rate occurs on the second day, a decrease of twenty-three pulsations. On the night of the second day the temperature rises again one deg. to 104 deg., the pulse again remaining stationary, after which it falls progressively.

This patient had during two days all the appearances of a grave attack of Yellow Fever. There was 15 per cent. of albumin in his urine, and light icterus on the fourth day; he had rather violent delirium on the first two nights. Happily the fever did not reach beyond 104 deg., and there was a remission of one deg. each of the first two mornings.

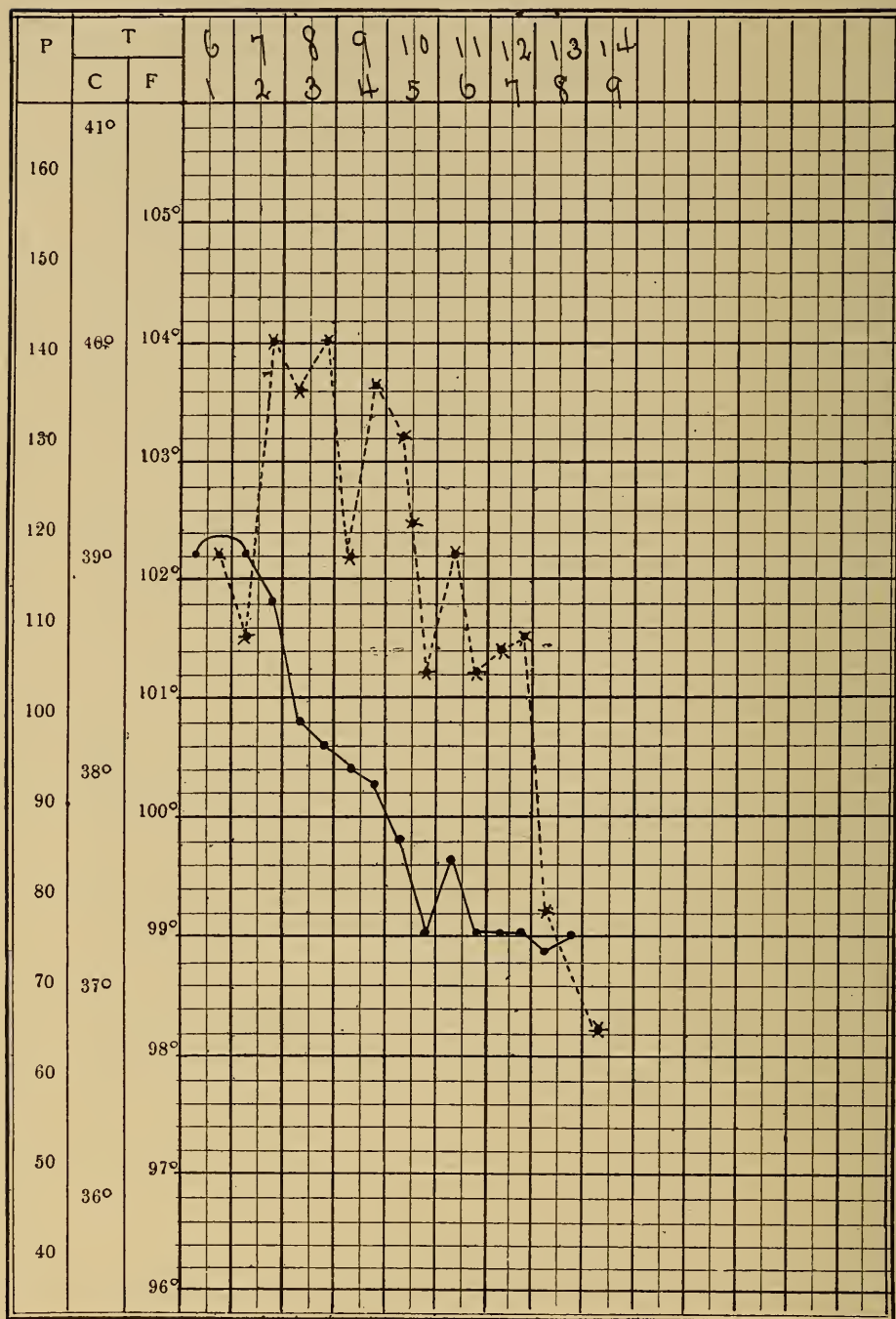
When Yellow Fever ranges between 103 and 104 deg. the patient generally gets well, especially if he is not alcoholic. I believe that, notwithstanding his denials, this patient must have been drinking a little, because he has since become a drunkard.

The fall in the pulse rate, though with an interruption, and Faget's law are characteristically shown.

The remissions and exacerbations in the fever characterize the cases of moderate intensity. The pulse line is almost straight in its descent, the temperature line irregular in its ascent, and the deferescence is shown by step-ladder lines. Recovery.

Type: Yellow Fever of Moderate Intensity and Remittent.

No. 9—AUGUST, 1874.



Recovery.

OBSERVATION NO. 9.

Adult, 26 years old.

In this observation the progressive fall of the pulse is typical from the first to the sixth day, notwithstanding the very accentuated remissions or exacerbations of more than two degrees daily during seven days.

The marked variations of temperature do not modify the fall of the pulse, and Faget's law is plainly manifest during the first four days. This young man was seized, while in good health, with all the symptoms of the outset of Yellow Fever; vomiting and epistaxis at the end of twelve hours, albuminuria appeared on the fourth day, though the urine was copious, and there was a rather pronounced jaundice on the fifth day.

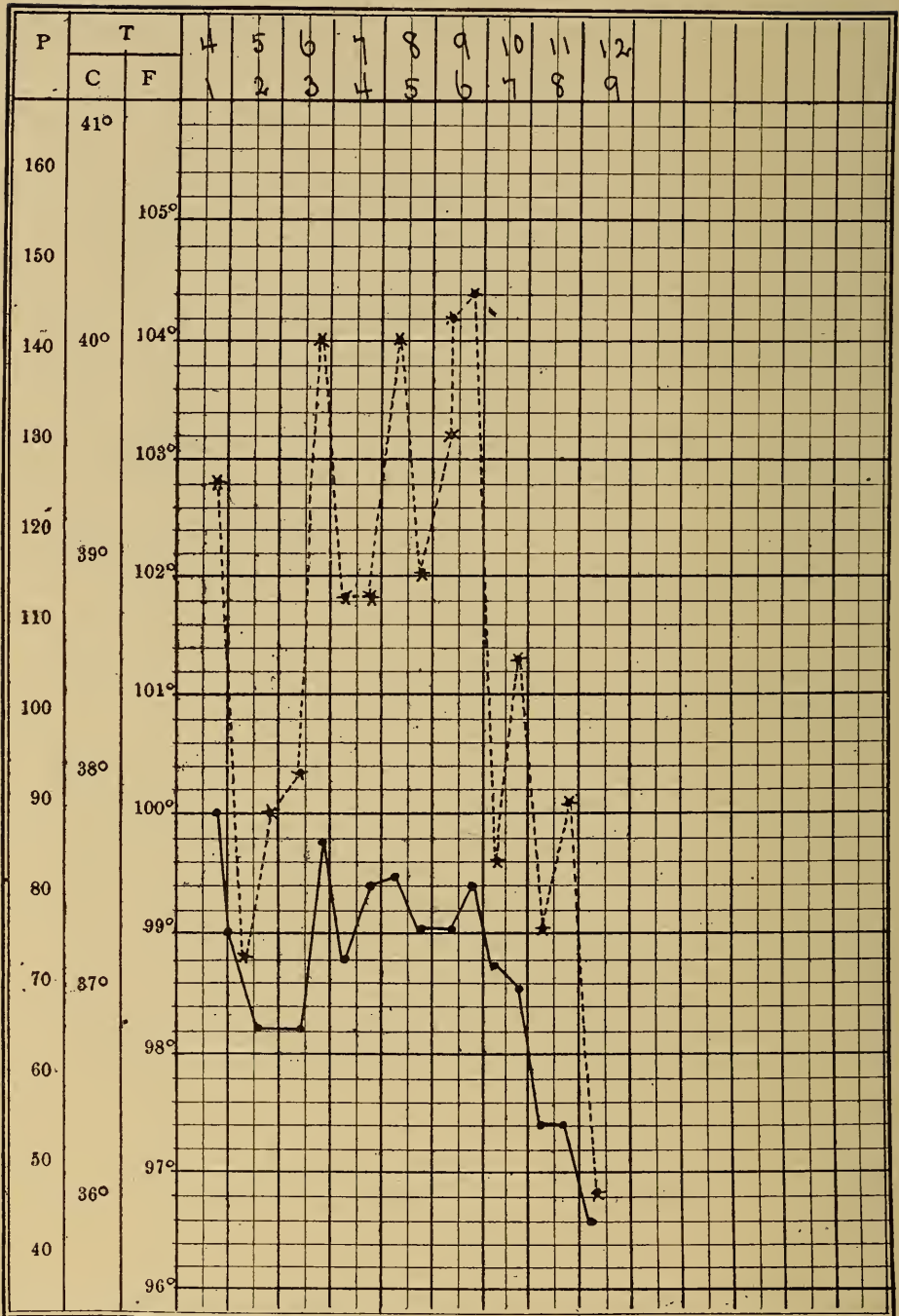
The temperature, beginning at 101.5 deg., rose 2.5 deg. on the second day, the pulse, however, falling instead of rising. Defervescence, beginning on the third day, was accomplished intermittently and the patient became convalescent.

The fever never surpassed 104 deg. and it ranged during six days between 101 and 104 deg., with more and more pronounced remissions after the third day. A remission of one degree or more is always a favorable symptom and announces a recovery, particularly if the temperature has not reached 104 deg.

A dangerous temperature ranges between 104 and 105 deg., and very grave temperatures reach 105 deg. and beyond. It is then that the physician must take vigorous action, as I shall indicate in the chapter on treatment. Recovery.

Type: Grave Remittent Yellow Fever.

No. 10—JUNE, 1878.



Recovery.

OBSERVATION NO. 10.

Adult, aged 23 years.

The outset in this young man's case was quiet. Fever light, 102.8 deg., the pulse 100, the congestive symptoms very little marked.

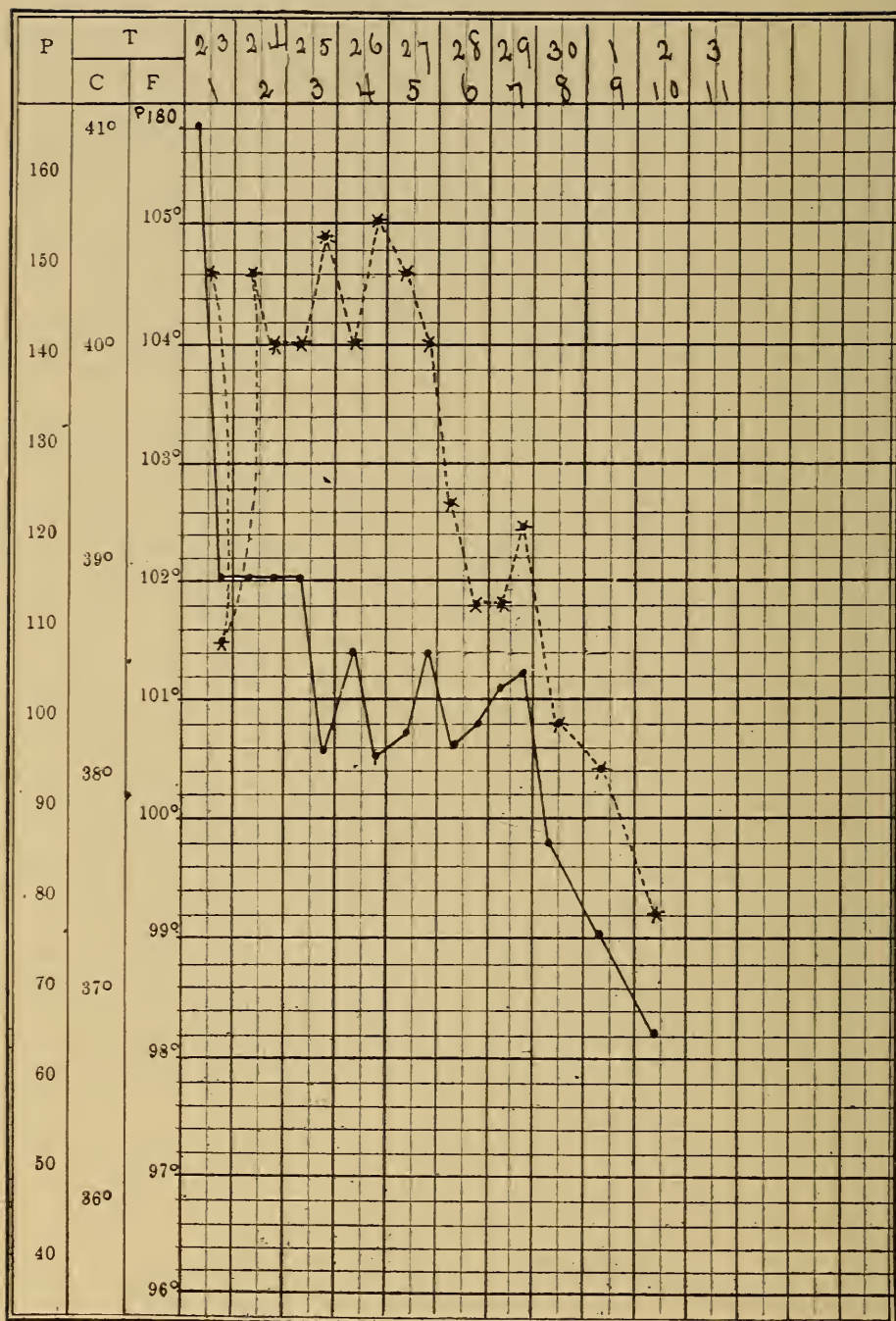
In twenty-four hours the pulse decreased by twenty pulsations and the temperature by 2.2 deg., under the influence of treatment: sponging, light purgative, weak infusion of digitalis and four drops of veratrum viride.

The remedies discontinued, the disease resumed its course, the fever rising, beyond that at the outset, to 104 deg. During three days there were exacerbations and remissions of more than one deg. in the morning. The pulse, which had decreased during the first three days, became variable like the temperature without ever being in correlation with it; for 84 pulsations are not in proper ratio with 104.3 deg. The patient had 15 per cent. of albumin in the urine; icterus on the fourth day; delirium; and his condition was serious without being alarming.

I publish this observation because it goes to show the influence of medication on the temperature. It is undeniable, but unfortunately the remedy has no action on the microbe and its toxin, hence its effects on the fever having passed off, the disease resumes its course. All remedies whatsoever given to control the fever act badly, be it on the stomach, which they irritate, as the sulphate of quinin, or on the kidneys whose secretion they diminish, as antipyrin and all the antipyretics of the aromatic series. Recovery.

Type: Very Grave Yellow Fever.

No. 11—SEPTEMBER, 1878.



Recovery.

OBSERVATION NO. 11.

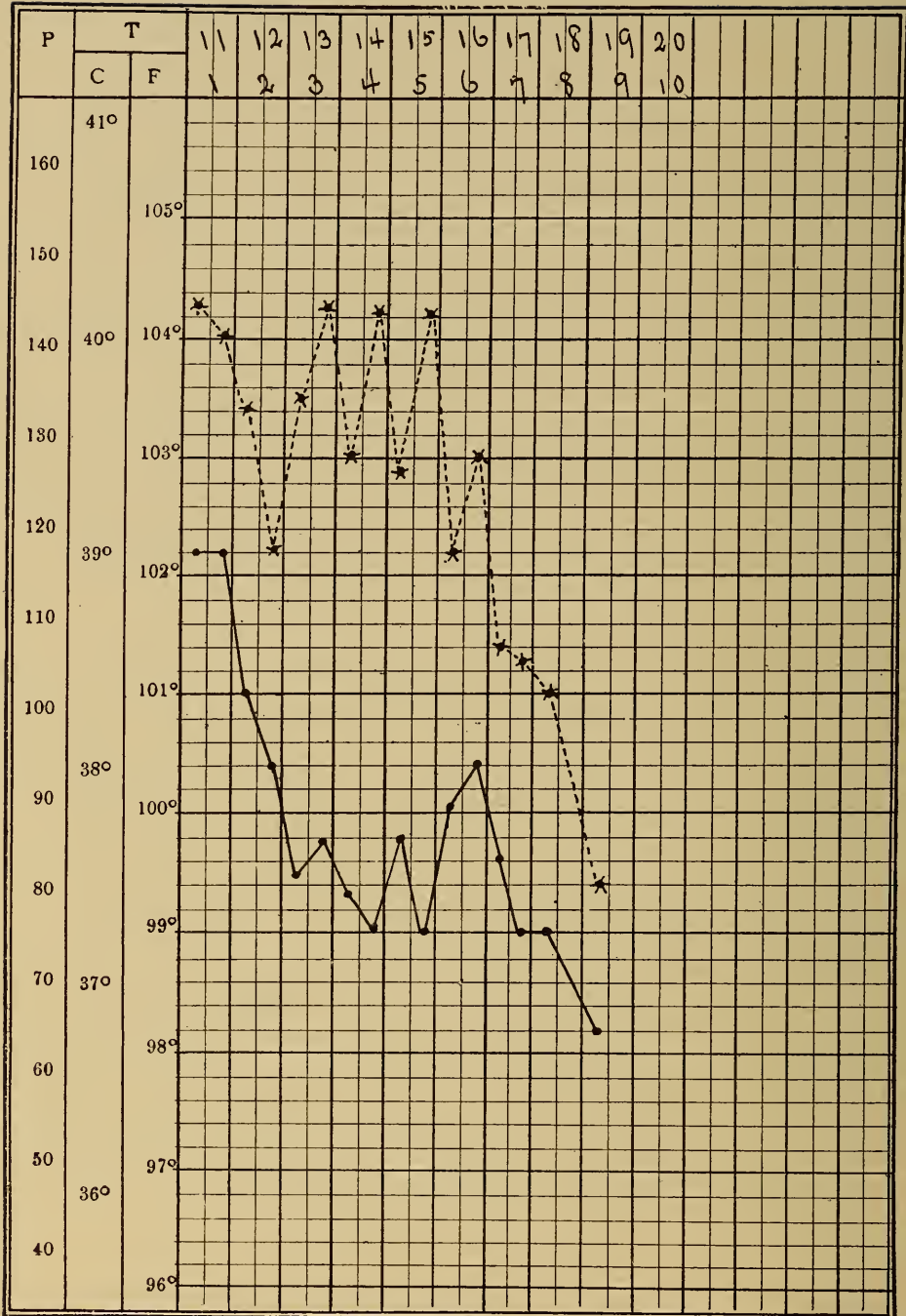
Girl, 23 years of age.

This clinical chart is filled with instruction. The gravity is manifested by the fever, which ranges during five days between 104 and 105 deg. The pulse of 180 at the outset is of rare frequency and is explained by the nervous condition of the girl and her fear of dying. This must be taken into account in considering the prognosis and must be quieted. The temperature even at the outset was very high, 104.6 deg., indicating danger. By means of energetic treatment: a purgative, cold sponging every half hour and digitalis with veratrum viride, the pulse fell to the extent of sixty pulsations, and the temperature three degrees, in twelve hours. A pulse of 180 is abnormal and, in Yellow Fever, every exaggerated symptom indicates grave virulence.

The temperature rose again on the second day to 104.6 deg. and ranged during four days between 104 and 105 deg. I had discontinued the digitalis and the veratrum; I no longer resort to them because I have had repeated evidence that if this medication influences the fever, it has no action on the disease, whose course is resumed with equal intensity. The situation seemed desperate during five days, especially when black vomit supervened. The latter stopped through absolute rest of the stomach—no medication, no drink, no ice. What saved the patient was her sound constitution aided by the cold sponging and the continuous healthy functioning of her kidneys. Intense icterus and 10 per cent. of albumin on the fourth day. The pulse remained at 120 during twenty-four hours, while the fever rose three degrees on the second day. Slight variations on the fourth day and the succeeding ones. Recovery.

Type: Grave Yellow Fever.

NO. 12—SEPTEMBER, 1870.



Recovery.

OBSERVATION NO. 12.

Adult, aged 23 years.

The curves in Chart No. 12 are those of grave Yellow Fever with remittent type. The patient was taken on September 11, 1867, with general aching, high fever, severe pains of the head, back and legs. I saw him at 10 o'clock; his skin was hot, red, covered with perspiration; his tongue was coated and moist; his face pale except over the cheek bones, where it was red and glossy. Severe supra-orbital cephalalgia.

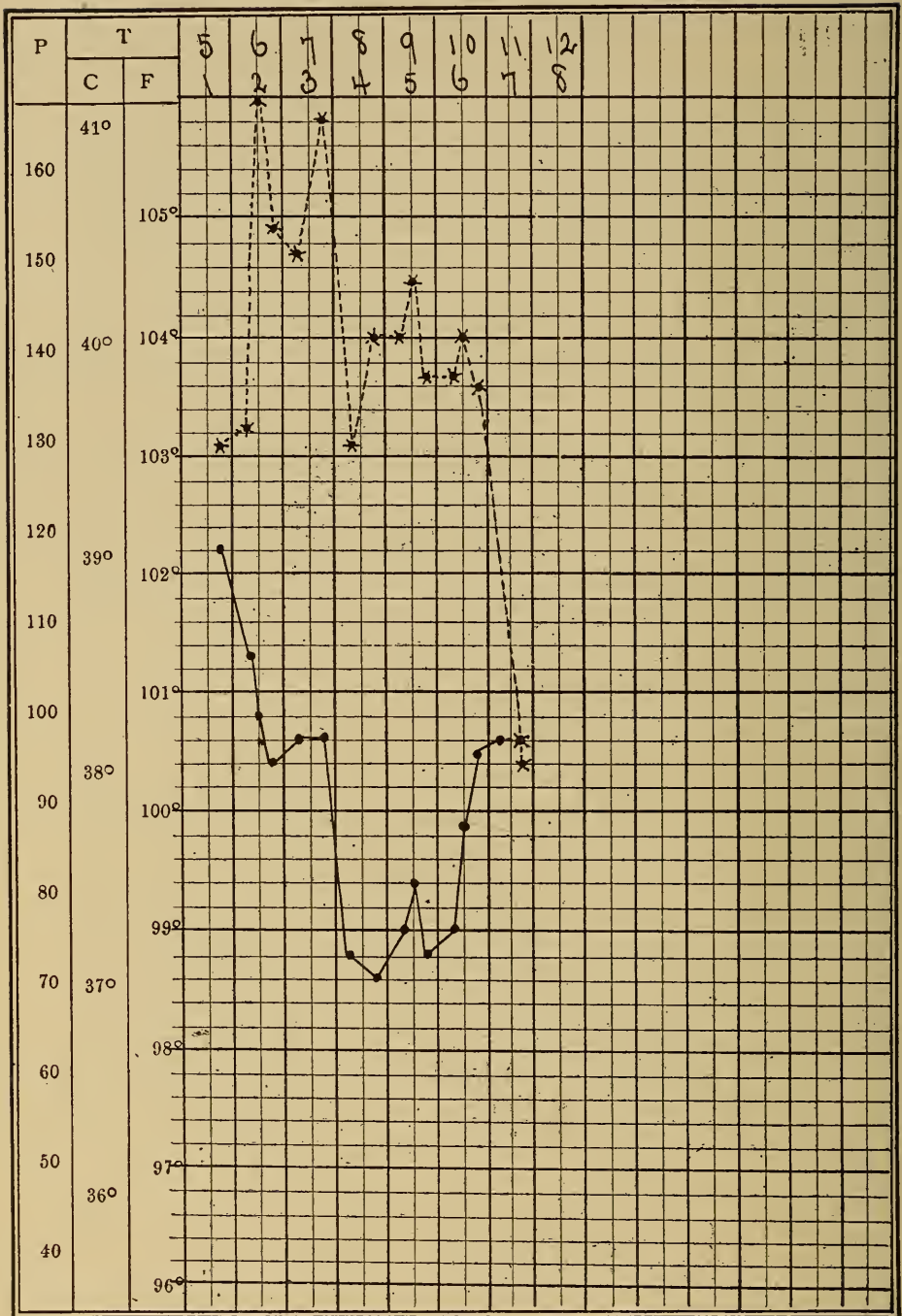
During three days there are remissions of more than one degree in the morning with exacerbations at night. The general condition, barring a good deal of excitement, remains fair. The urine is abundant, although albuminous from the third day. The stomach acts well; the patient vomited only once, on the fourth day, after having taken a purgative. The gravity of the case was denoted by the height of the fever during five days, above 104 deg. The favorable sign was the morning remission.

The fever fell uninterruptedly from the sixth to the tenth day. Icterus well accentuated on the fourth day. Great weakness during one month.

On the eighth day an ecthymatous pustule formed on the right arm, which became highly inflamed from the suppuration. According to my experience, the formation of pus in Yellow Fever is a good sign. I never lost from Yellow Fever a patient in whose body pus was being formed. It is probably a coincidence. I shall publish two other observations relating thereto and shall refer again to this point in the chapter on treatment. Recovery.

Type: Pure Yellow Fever. Black Vomit.

No. 13—SEPTEMBER, 1870.



Death,

OBSERVATION NO. 13.

Adult, 25 years old.

A typical case of pure Yellow Fever without predominant secondary infections or auto-infection. The kidneys acted up to the time of death. The fall in the pulse is very noticeable and progressive during five days, notwithstanding a rise of nearly three degrees on the third day. In this chart the progressive fall in the pulse rate and Faget's law are typically apparent.

First Day—A., 25 years old, a steamship captain, noticed a slight malaise on the morning of September 5, 1870; he breakfasted with appetite; at noon a chill, cephalalgia, rachialgia, fever. He is seen at 3 P. M.; I find him with a congested and glossy face, eyes brilliant, having profuse sweats and burning thirst. Has alimentary vomiting. I have him transported to land.

Second Day—Cephalalgia, rachialgia, general aching, temperature 106 deg.

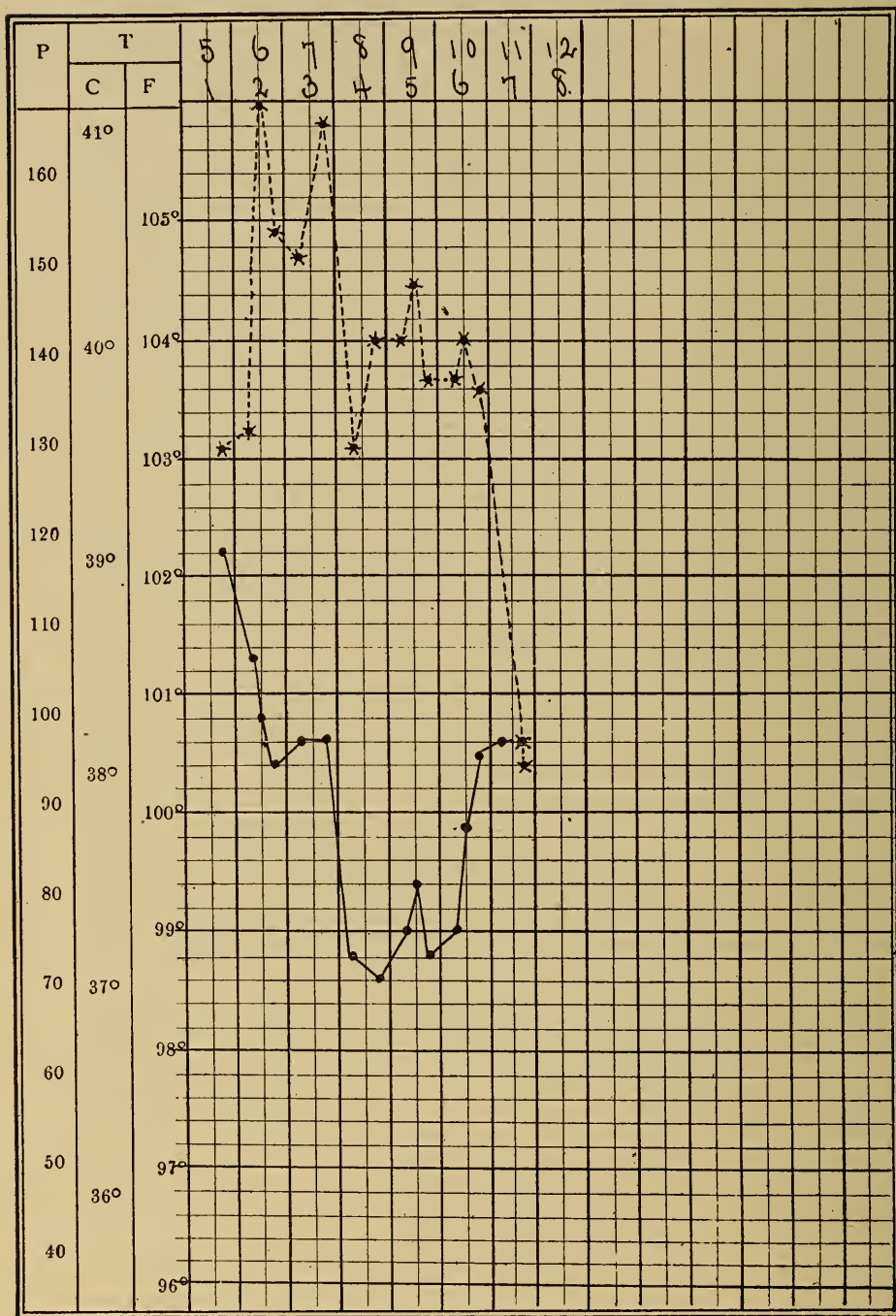
Third Day—Spent bad night, with delirium. Urine is abundant, with 10 per cent. of albumin; face is pale; he is very weak, has vomited a glass of lemonade, temperature 105.8 deg.

Fourth Day—Has had a little sleep and passed a better night. Pulse, 78; temperature, 103.1 deg. Urine is biliary and ammoniacal. Head is heavy; has nausea. By noon has mucous vomiting, containing black specks—coffee grounds. At 3 o'clock, retention of urine; catheterized and two large glasses of thick, yellow, ammoniacal and albuminous urine are drawn. Vomits all he takes. Speaks little, but asks repeatedly if he has Yellow Fever; is very much worried and says he is going to die. The subpalpebral sclerotic slightly yellow. By 8 P. M. has black vomit constantly and his face is very pale, temperature 104 deg.

Fifth Day—Sleepless during preceding night, but no vomiting and urinates freely. Vomits at 7 A. M.,

Type: Pure Yellow Fever. Black Vomit.

No. 13—SEPTEMBER, 1870.



Death.

after drinking ; vomited matter contains black particles like fly-wings, which sink and adhere to the bottom of the bowl. His tongue is moist ; pulse, 80 ; temperature, 104 deg. Seen at 11 o'clock ; his *facies* is bad ; his face and body are slightly yellow ; respiration is deep and irregular ; urine is free and abundant ; extreme agitation. By 8 P. M. his skin is of a deep yellow, almost the color of mahogany.

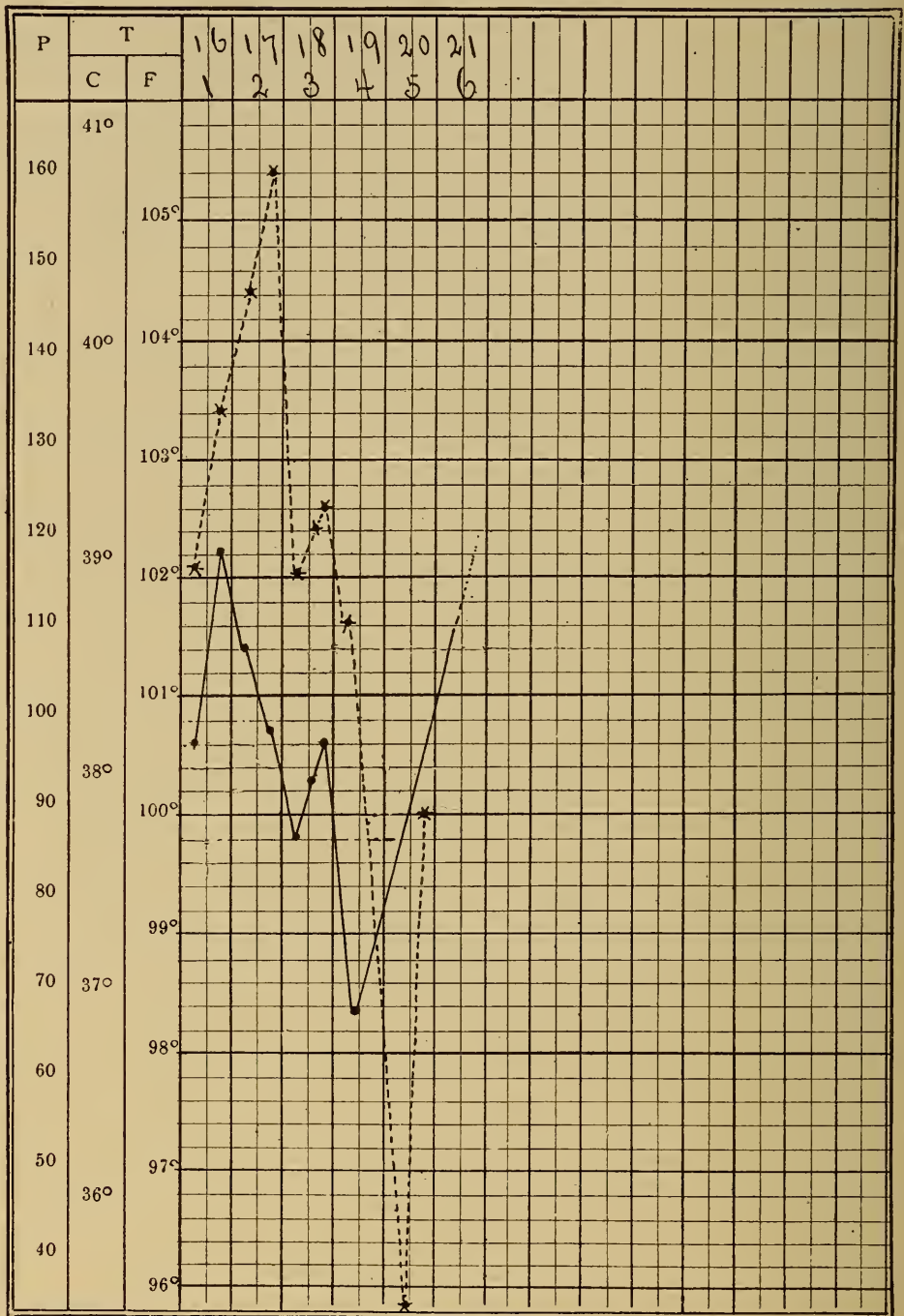
Sixth Day—Has passed a very bad and agitated night, with slight delirium. Not having urinated since 2 P. M. the day previous, he was catheterized and two large glasses of urine were drawn. At 3 P. M. passes biliary stools and urine. Icterus is very pronounced ; skin cadaverous ; pronounced black vomiting. By 6 P. M. respiration has become shallow and irregular. Has a wild expression and constant nausea.

Seventh Day—Spent a very restless night, with delirium and hiccough. Skin is of a light mahogany color. Large ecchymotic spots on the back and nates ; gums swollen and black ; retention of urine ; catheter drew half a pint of urine. Death during the night, preceded by complete unconsciousness. The cadaver is of a mahogany color, mottled with large ecchymoses.

I have insisted upon the details of this observation of Yellow Fever which killed by its own virulence alone, without nephritis, without auto-infection. The observation is complete and very instructive to such as desire to study its curves and classify the symptoms in their succession day by day, almost hour by hour.

Type: Yellow Fever with Acute Nephritis, Black Vomit and Anuria.

No. 14—AUGUST, 1878.



Death.

OBSERVATION NO. 14.

Adult, 21 years of age.

In this case the law of the fall in pulse rate is violated, as on the first day the pulse increased twenty pulsations instead of falling.

In this young man of nervous temperament but steady habits, the disease commenced by signs of moderate congestion, but the outset did not forecast the fatal issue, though his vomiting was uncontrollable.

This young man was betrothed and his love affairs had interfered with his proper feeding and sleeping for several weeks; excited frame of mind and weakening of organic resistance.

During forty-eight hours the temperature rose like a rocket, uninterruptedly to 105.4 deg. In adults, such a temperature is always very dangerous; notwithstanding a rise on the second day of two degrees, the pulse followed the usual law and decreased by twenty-four pulsations.

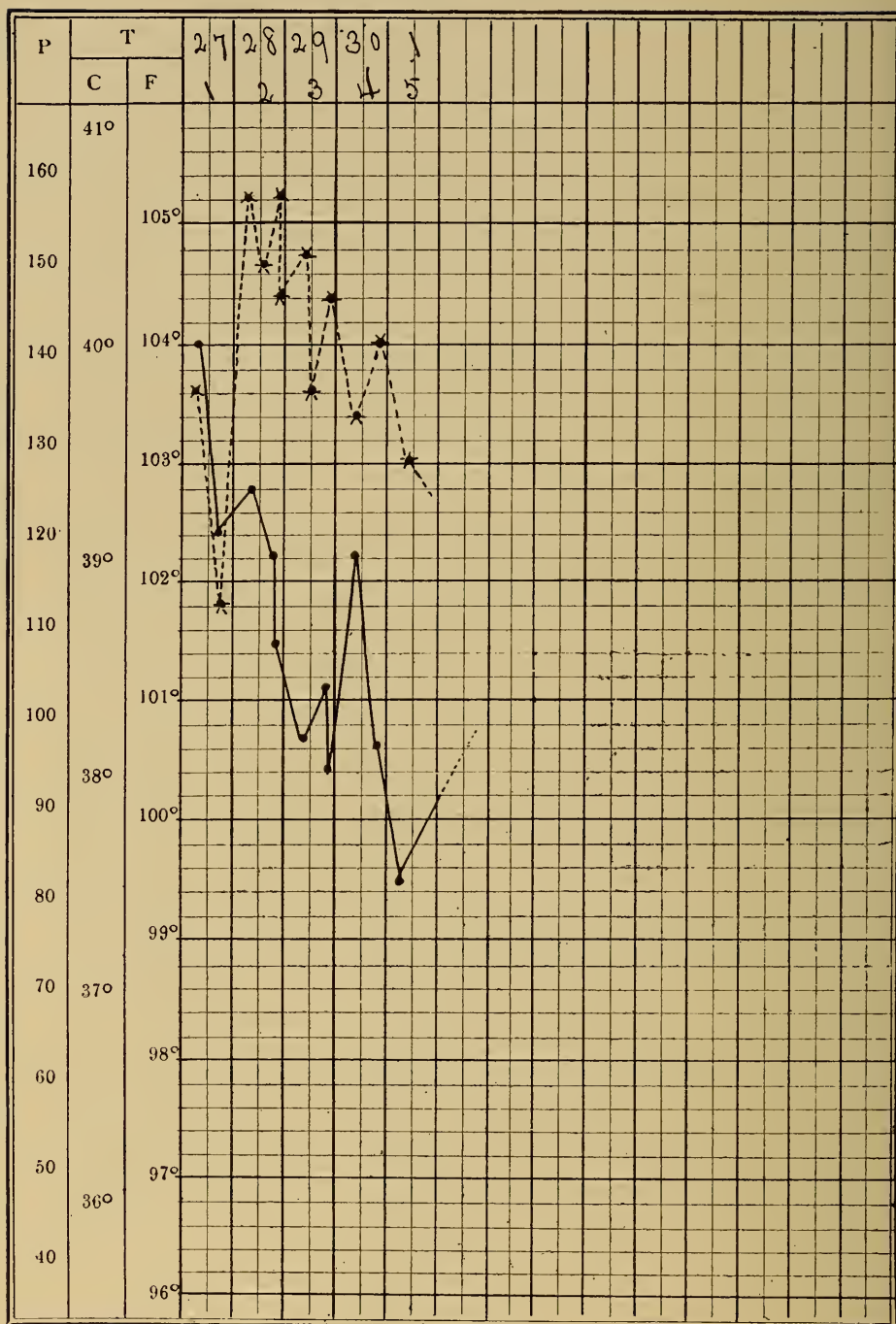
Black vomit began on the third day. Suppression of urine supervened on the fifth day and death ensued. The patient was killed by the Yellow Fever toxin and particularly the renal lesions and uremia,

The fall in temperature is always considerable at the time that black vomit occurs, but when the patient ceases to urinate and vomits black, defervescence is sudden. In this case it is extraordinarily so, the fall being from 105.4 to 95.6 deg., or nearly ten degrees.

This young man was annihilated by Yellow Fever chiefly on account of the incoercible vomiting; not being able to drink he was unable to eliminate the toxin. This was in 1878. To-day, new ideas prevailing concerning infections, chiefly owing to the labors of Professor Bouchard, he could be made to drink abundantly by the rectal route.

Type: Fatal Yellow Fever without Black Vomit.

No. 15—SEPTEMBER, 1878.



Death.

OBSERVATION NO. 15.

Girl, 16 years old.

I had treated, during the first two days of September, 1878, two sisters of this young girl, who both had an attack of Yellow Fever of moderate intensity without alarming symptoms.

Her turn came on September 27, when she was taken with a fever of 103.6 deg.; pulse, 140. She was in a state of great nervous excitability, speaking only of dying. She had frequent vomiting, low delirium and all the symptoms of invasion of Yellow Fever. Cold sponging, digitalis and veratrum lowered the temperature nearly two deg., and the pulse by sixteen pulsations. However, on the second day the fever rose to 105.2 deg., remaining at that elevation all day notwithstanding a cold bath and cold spongings. There was continuous delirium and constant vomiting. She did not urinate. Upon catheterization on the second and the third day, or during forty-eight hours, I drew the first time a teaspoonful and the second time three drops of urine.

On the third day uremic symptoms: uncontrollable vomiting; agitation; difficult respiration; delirium; unconsciousness; extreme pallor.

She died on the fifth day with convulsions, without ever having had black vomit.

Compare the last three observations in order to recollect how death occurs in Yellow Fever unaccompanied by acquired organic lesions:

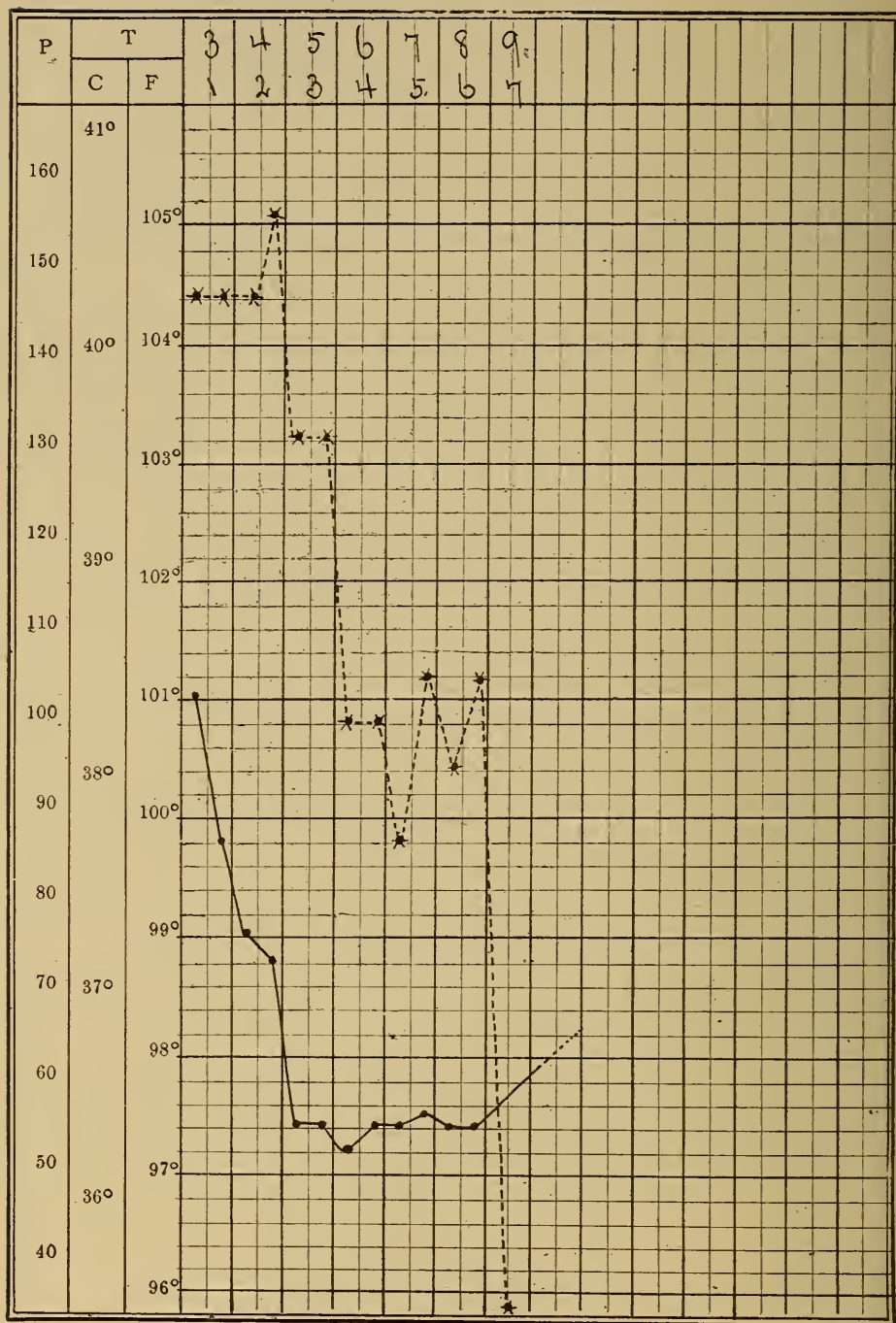
No. 13, black vomit, abundant urine.

No. 14, black vomit, with suppression of urine.

No. 15, suppression of urine only, and, on the second day, without black vomit—a very rare occurrence.

Type: Pure Yellow Fever. Very Virulent.

No. 16—SEPTEMBER, 1878.



Death.

OBSERVATION NO. 16.

This is a case of very virulent Yellow Fever ending in death on the seventh day without any secondary organic process sufficient to sensibly modify the course of the disease. The patient was killed by the yellow toxin which poisoned the entire organism without any predominating organic or functional lesion.

J. L., aged 32, vigorous and laborious, but organically enfeebled by excessive work in the sun, lives on coarse food, and is in New Orleans since twenty-three months.

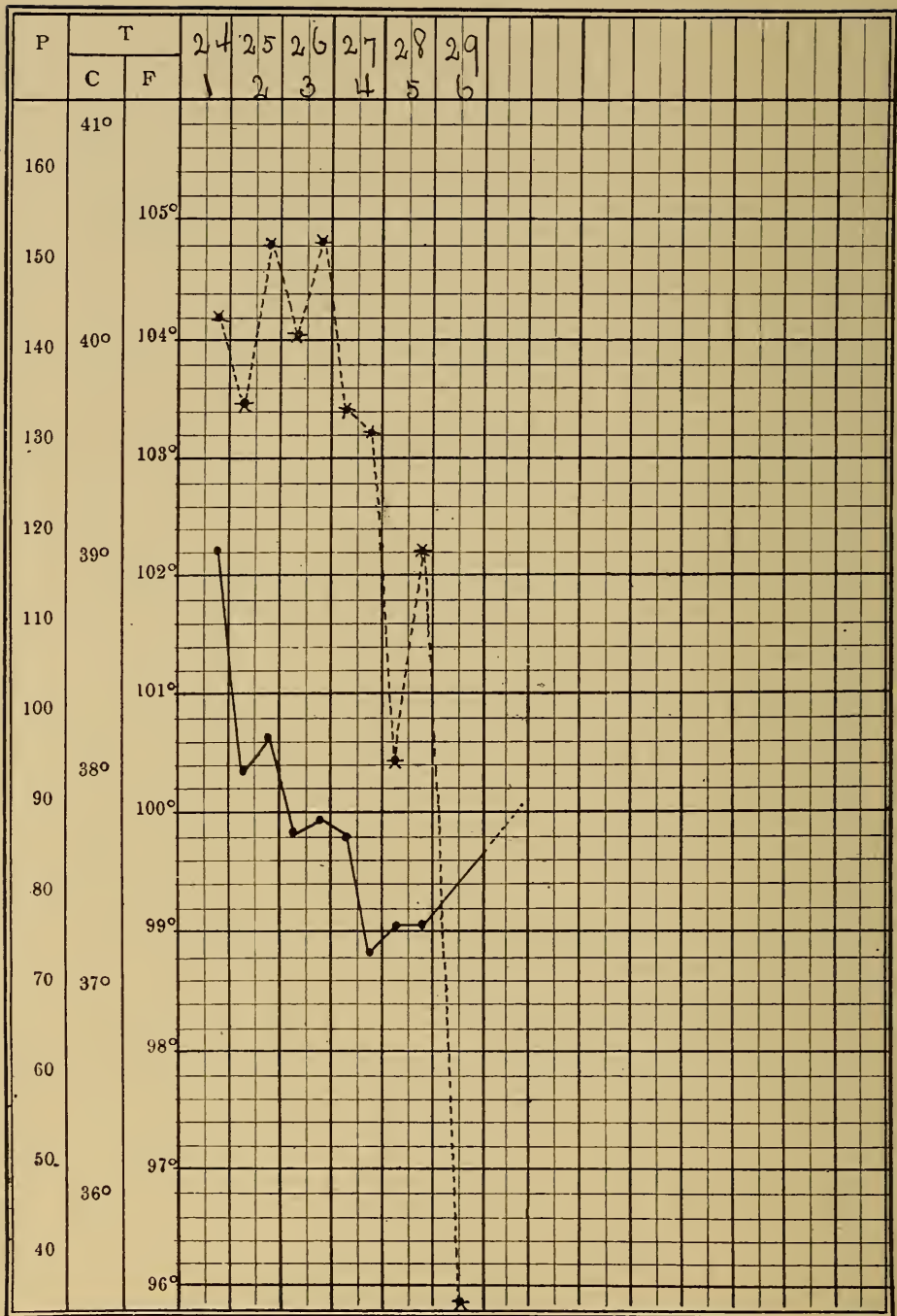
The symptoms of congestion are pronounced; chill, vomiting, *facies* red and glossy, cephalalgia and rachialgia pronounced; pulse, 100; temperature, 104.4 deg. The temperature remained without remission at 104.4 deg. during thirty-six hours, a serious symptom; a still more serious sign is that, notwithstanding energetic treatment, it rises to 105 deg. Urine free, with 10 per cent. of albumin on the second day. The fall in pulse rate, notwithstanding the elevation of temperature on the second day, is progressive and without interruption up to the last moment, as happens in nearly all cases of pure Yellow Fever.

Black vomit on the third, fourth, fifth and sixth days, becoming daily more abundant. Albuminous urine up to the seventh day. Fever falls with the black vomit, reaching in five days 95.5 deg., a deferescence in six days of nearly ten degrees.

Icterus on the fourth day. Pulse remains stationary at 60 during the period of infection and of black vomit, becoming thready and uncountable a few hours before death.

Type: Pure Yellow Fever.

No. 17—JULY, 1870.



Death.

OBSERVATION NO. 17.

This is another observation of typical pure Yellow Fever without secondary infection or auto-infection. There must certainly be organic lesions since there is albuminuria and the renal purification does not occur normally, and since there is intense icterus, but they do not preponderate as they do in alcoholic subjects or in patients organically weak.

The reader is requested to compare the chart of cases of pure Yellow Fever, for, save a few variations in the degree of fever, the resemblance is striking.

The lines of the pulse and of the temperature separate, the pulse lowering and the temperature rising during the first three or four days; then, when black vomit occurs, the temperature falls and the pulse rises a moment before death; the two curves almost form a broken circle.

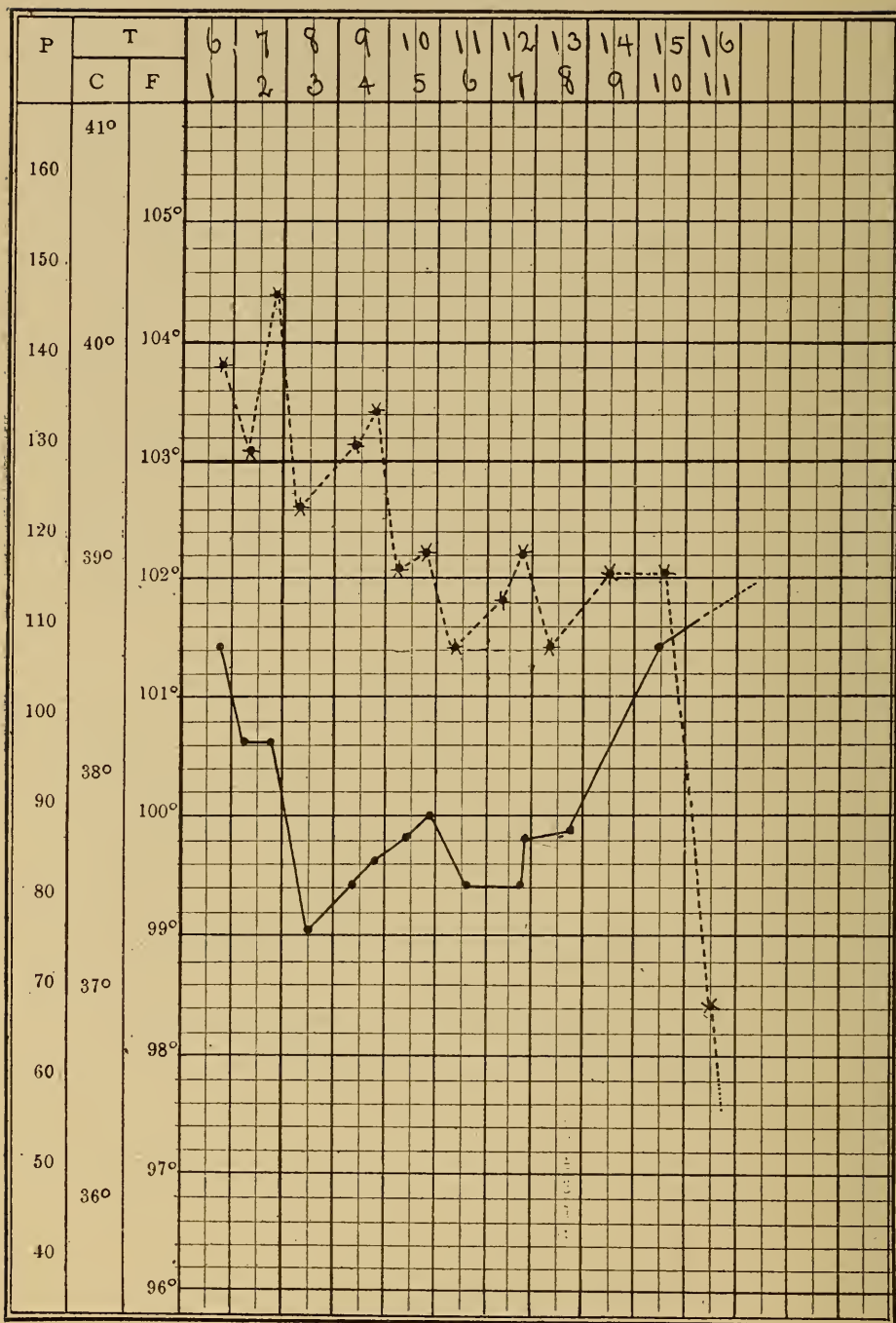
C. L., aged 28, in New Orleans since three or four years, is taken whilst in full health with a chill, general aching, vomiting, high fever, with face glossy, cephalalgia, rachialgia. Pulse 120, temperature 104.2 deg. Slight remission the first night, but the temperature rises again to 104.8 deg., a grave symptom, ranging during two days between 104 and 104.8 deg.

Defervescence begins with black vomit, reaching 95.6 deg. The patient urinated almost up to the time of his death. Bleeding of the gums on the fourth day. Pronounced icterus.

As in all cases of pure Yellow Fever the fall in pulse rate and Faget's law are manifest.

Type: Fatal Yellow Fever. Pulmonary Hemorrhage.

NO. 18 --SEPTEMBER, 1867.



Death.

OBSERVATION NO. 18.

At 8 o'clock in the morning on September 6, 1867, J. D., aged 28, a butcher, was taken sick. He is thin, of slight build, lives in a damp room. General aching, light chills, animated *facies*, skin hot, covered with sweat, gums swollen, slight nausea. Pulse, 110; temperature, 103.8 deg.

Second Day—Nausea, pain in the back, in the head, in the belly, urinated freely, mucous vomiting at night. Pulse, 100; temperature, 104.2 deg.; has seven or eight stools.

Third Day—Passed a fair night. General condition like yesterday's.

Fourth Day—Severe pains in abdomen and head, nausea.

Fifth Day—Violent pains in the belly, urine albuminous and scanty.

Sixth Day—Had a restless night, extreme weakness, bright yellow color of the eyes, paler over the rest of the body, strong epigastric pains, slight bleeding of the gums, urine scanty, 15 per cent. of albumin.

Seventh Day—Gums much swollen and bleeding. Rusty sputum, prune-juice like. Auscultation negative. Entire body is of a yellow mahogany color. At 3 A. M. black vomit, black stools, sputum still sanguinolent.

Eighth Day—General condition very grave, bleeding of the gums, black vomit.

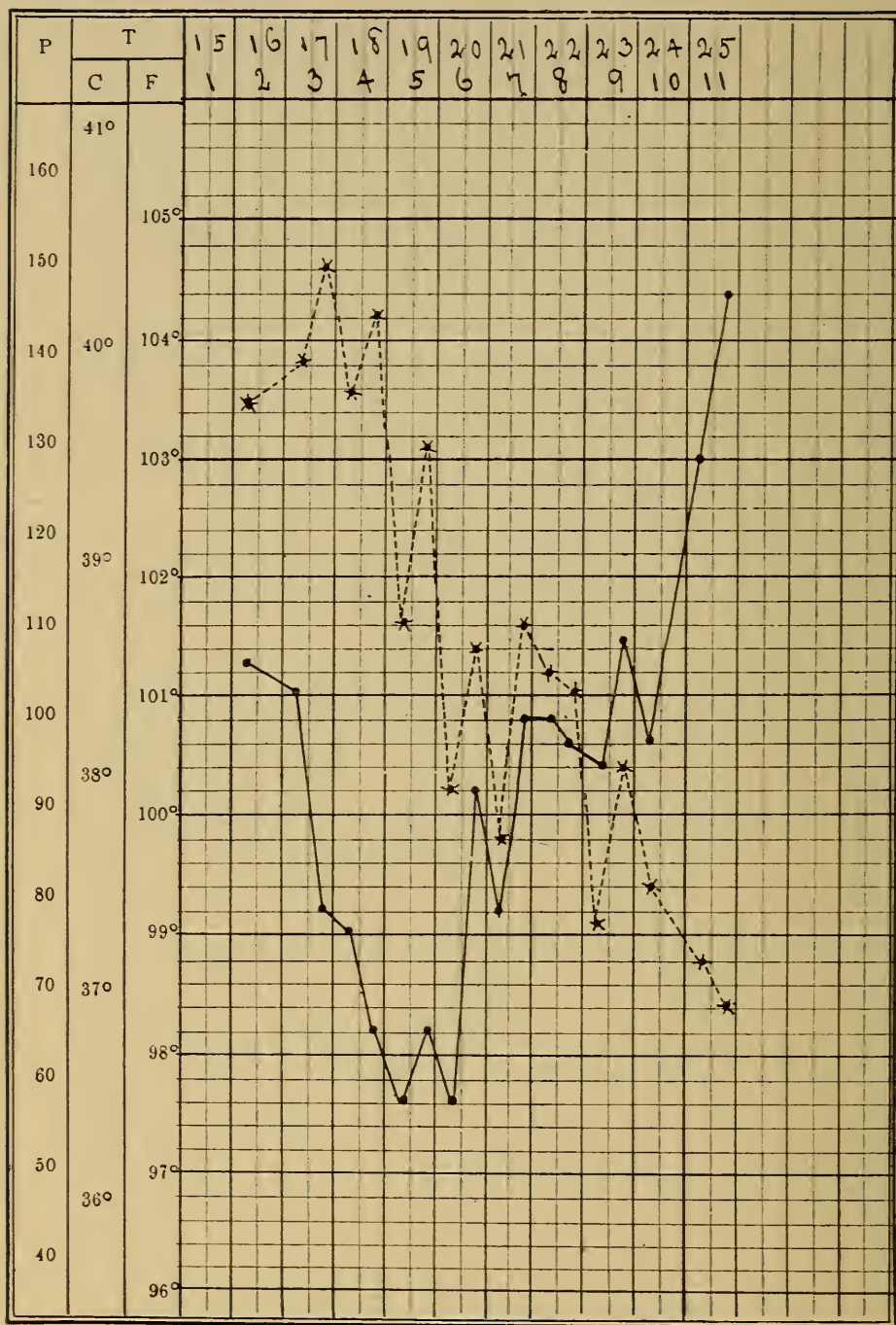
Ninth Day—Same condition, coldness of extremities, bloody sputum, intense icterus, passive erythematous patches, dark actions, urine free.

Tenth Day—The hemorrhages continue and patient dies in a state of profound anemia, throwing off before death a strong cadaveric odor.

Progressive fall in pulse rate. Faget's law. Yellow Fever complicated with hemorrhage from the lungs, the only case I have observed.

Patient in Feeble Health and Slightly Alcoholic.

NO. 19—SEPTEMBER, 1878.



Death.

OBSERVATION NO. 19.

Adult, aged 24 years.

An alcoholic seized with an infectious febrile disease is always seriously ill. Attacked by Yellow Fever he often dies. During an epidemic the alcoholic and the poor devils with the worst lodgement and care give four-fifths of the mortality.

Alcohol damages the same organs as Yellow Fever—the kidneys, the stomach, the liver. To the chronic lesions produced by alcohol the typhus icteroides adds an acute one, which acts as a spur. At the announcement of an epidemic all the non-acclimated alcoholics should go to the mountains to drink pure water, for not only they nearly all die of Yellow Fever, but they propagate the disease. In leaving they would save not only their own lives, but that of many others. Physicians should popularize this truth.

Observation No. 19 testifies to the gravity of Yellow Fever in a patient who is even slightly alcoholic. I saw the patient on the second day; on the third day the fever rose to 104.6 deg., with a remission on the fourth day to 103.5 deg. Black vomit occurred on the fifth day, lasting one day, then defervescence slowly took place until the ninth day, when everything led to expect a recovery; but the lesions of the kidneys became accentuated, the urine more scanty, with 40 per cent. of albumin, becoming suppressed on the tenth day. Death on the eleventh day of acute nephritis.

In alcoholics the prognosis must be reserved, unless the urine, both in quantity and quality, indicates clearly either a fatal issue or a recovery.

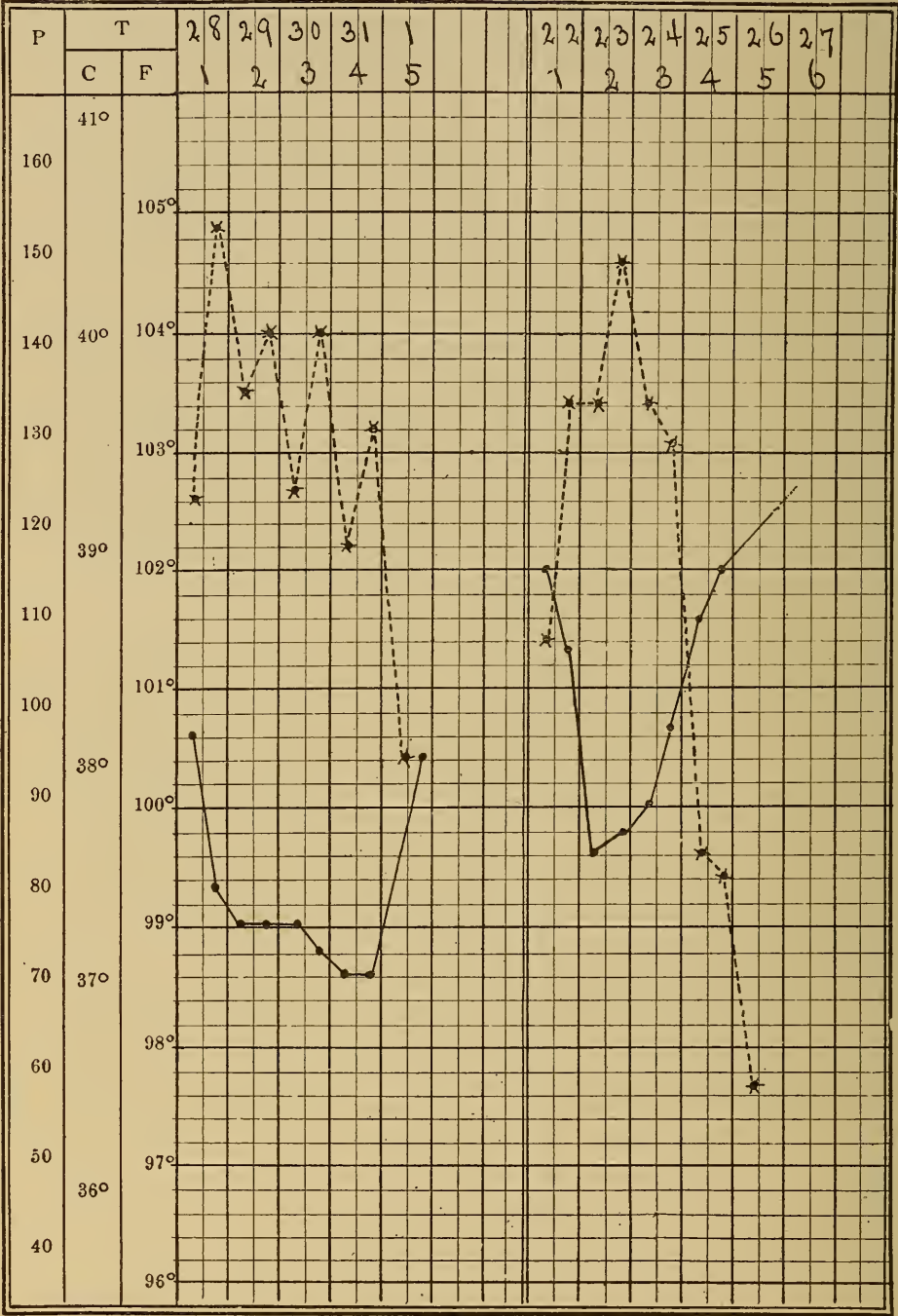
Fall in the pulse rate and Faget's law both manifest.

Type: Yellow Fever and Alcoholism.

Yellow Fever and Nephritis.

No. 20—AUGUST, 1878.

No. 21—JULY, 1878.



Death.

Death.

OBSERVATIONS NO. 20 AND NO. 21.

No. 20 is the clinical chart of a butcher, aged 29, a confirmed alcoholic for four years. As in all alcoholics taken with Yellow Fever, the urine was rare and albuminous as early as the second day. The liver, already affected like the kidneys by alcohol, became more diseased and intense icterus appeared on the third day; the stomach revolted from the beginning; nausea and vomiting during the first twenty-four hours. Restlessness, delirium, and profuse sweats during the night. Black vomit came on the third day, by which time the scanty urine when heated became completely coagulated. On the fifth day, suppression of urine and death. The gums, stomach, and intestines were bleeding since the third day.

The patient whose chart is No. 21 was 19, not alcoholic, yet on the second day, like the alcoholic, his urine became scanty, with 40 per cent. of albumin. Intense icterus rapidly showed itself on the third day. He had no black vomit. The urine became suppressed completely on the fourth day and he died with bladder empty on the fifth day, with delirium, a cold, clammy and very yellow skin.

Yellow Fever then can bring all its virulence to bear on the kidneys and the liver without anterior lesions having been known, as in this patient, in the young man of observation No. 15, and the young man of No. 14.

Abundant albuminuria on the second day and intense icterus on the third day are always very grave symptoms.

The abuse of alcohol produces slowly the same cellular lesion, fatty degeneration, as a very virulent yellow toxin.

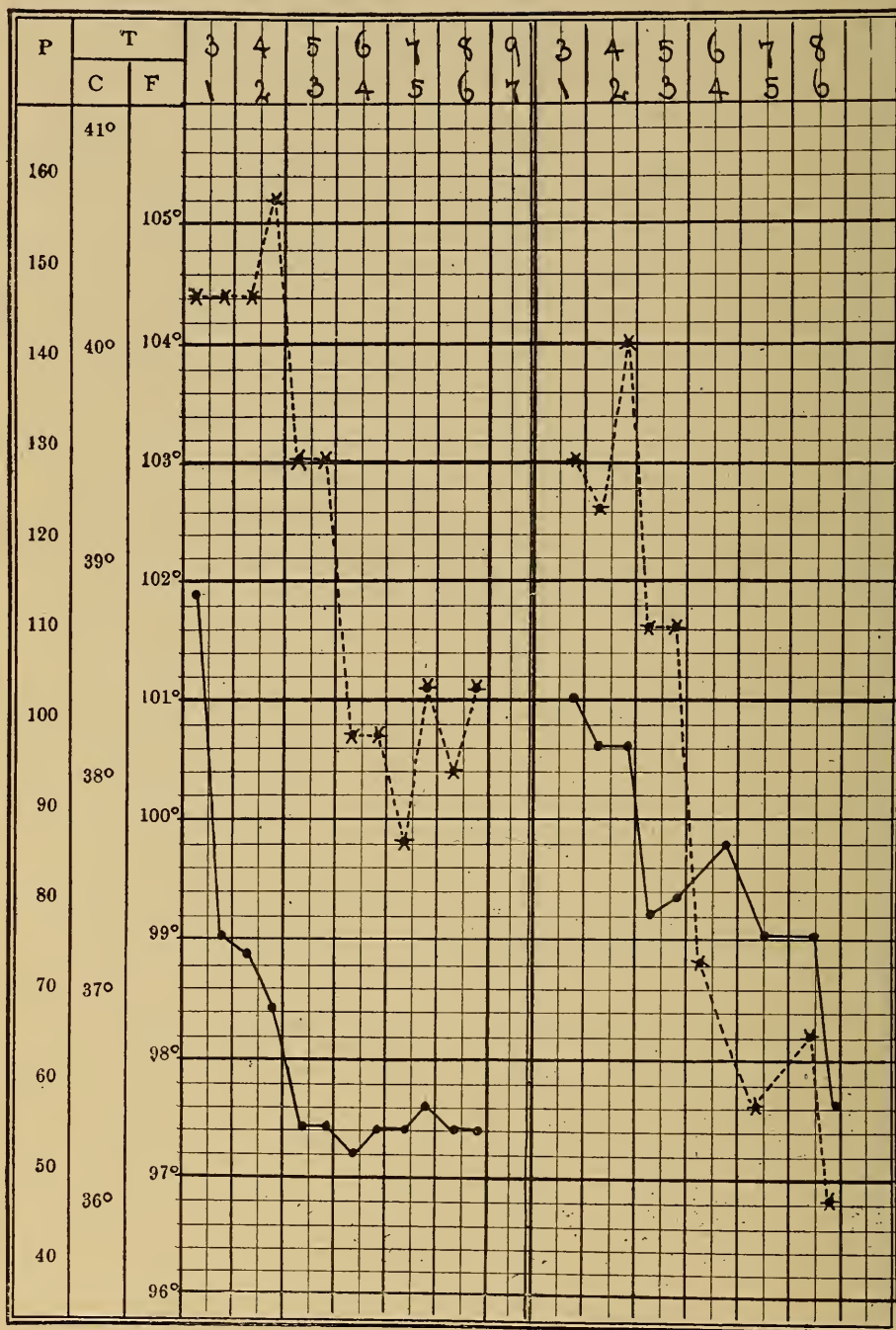
Progressive fall of the pulse. Faget's law is characteristic.

Type: Yellow Fever and Alcoholism.

Yellow Fever and Nephritis.

No. 22—SEPTEMBER, 1878.

No. 23—OCTOBER, 1878.



Death.

Death.

OBSERVATIONS NO. 22 AND NO. 23.

J. L., aged 32 years, alcoholic. Fever began in the dangerous zone at 104.4 deg., without remission during thirty-six hours, a grave symptom; exacerbation on the second day of .8, rising to 105.2 deg.

The course of the temperature alone under similar circumstances almost surely indicates death. Black vomit lasted three days, beginning on the third day. Albuminuria, 30 per cent., with scanty urine. On the fifth day the patient ceased urinating and not a drop was found in the bladder, notwithstanding several catheterizations.

The progressive fall of the pulse is very remarkable, notwithstanding the marked elevation of temperature to 105.2 deg.

In this patient, as in nearly all alcoholics, the contractions of the stomach lasted three days, causing the vomiting of all drinks and of mucosities. On the third day the vomit generally becomes black.

Observation No. 23 goes to show how Yellow Fever is always very virulent when it attacks a diseased organism, whether it be by alcohol or simply by bad food and excessive work. Yellow Fever does not love the weak. One must be healthy and strong in order to resist the icteroid germ.

Adult of 22.

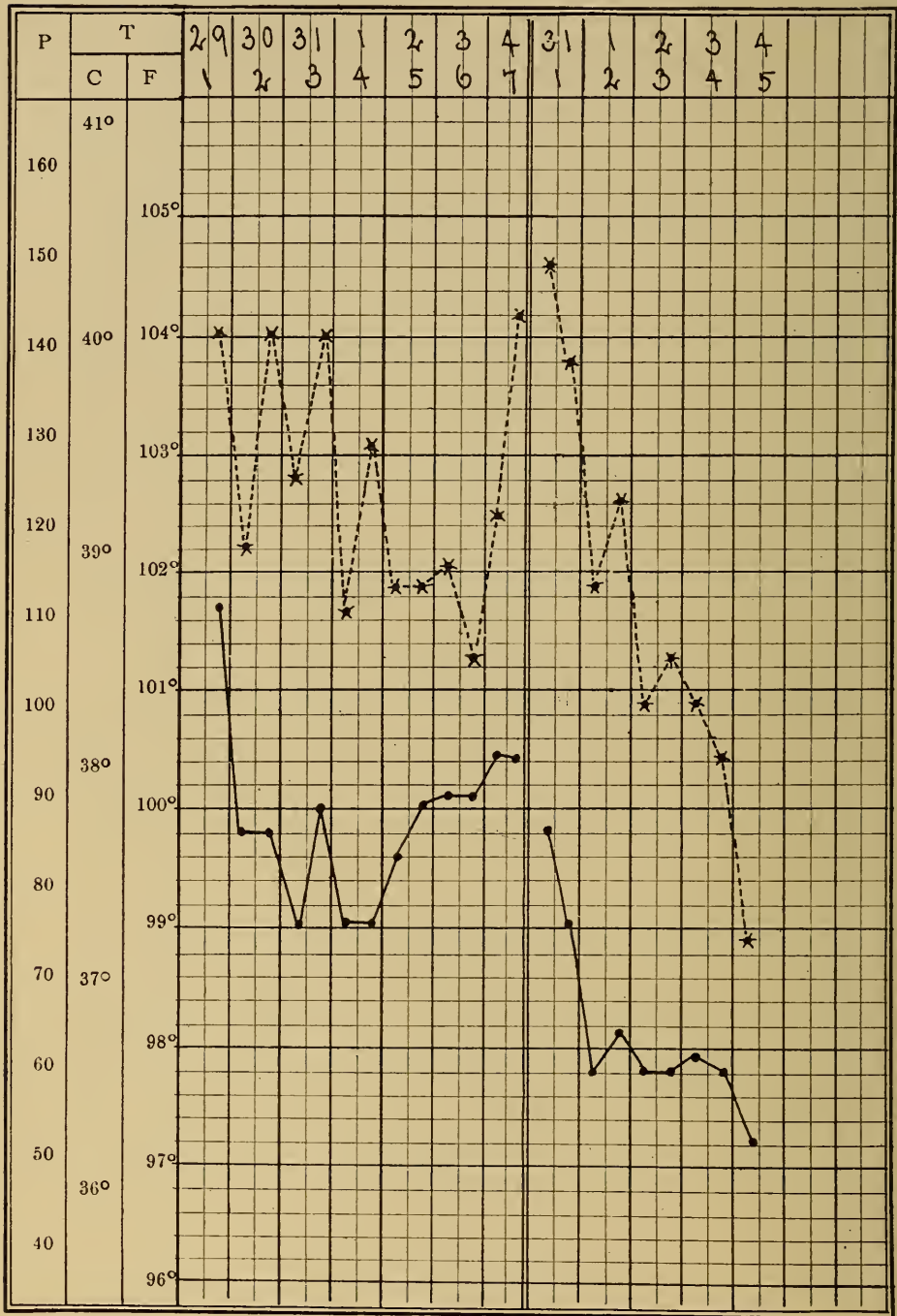
This lack of organic resistance in this instance is striking—there has really been no struggle. Fever up to 104 deg. on the second day, and already the urine is very albuminous; on the third, fourth and fifth days the patient has black vomit; temperature falls seven degrees in four days and death ensues, preceded by convulsions and coma.

Fall of pulse rate and Faget's law both manifest.

Type: Yellow Fever in the Alcoholic.

No. 24—AUG. AND SEPT., 1878.

No. 25—JULY AND AUG., 1878.



Death.

Recovery.

OBSERVATIONS NO. 24 AND NO. 25.

The patient in No. 24 was a chronic alcoholic, drinking for twenty years and having reached an age, 38 years, at which in virulent epidemics Yellow Fever is always serious.

The fever ranged between 103 and 104 deg. during the first three days; delirium, nausea and vomiting, scanty urine, 30 per cent. of albumin on the second day. Icterus and black vomit on the night of the third day. No more urine on the sixth day and death, in horrible convulsions, which caused the temperature to rise to 104.2 deg.

It is very rare that death in Yellow Fever should occur while fever is yet present. The temperature at the time of death is always very low.

Nearly all alcoholics, having Yellow Fever, die. In the very severe epidemics, like in 1867, nearly 100 per cent. die. In the less severe epidemics, as in 1878, the average is 90 per cent. In 1897, an exceedingly benign epidemic, many alcoholics recovered.

Observation No. 25, of a cured alcoholic is a consoling one. J. B. V., aged 25 years, barkeeper; was drinking a good deal for six years; notwithstanding my apprehension, justified by the knowledge I had of his habits, and notwithstanding the high fever, 104.6 deg. at the outset, the disease ranged like a light attack of Yellow Fever. Defervescence took place in five days, almost without interruption, the fever having lessened almost regularly. The urine remained abundant with 5 per cent. of albumin. Icterus light. The kidneys and the liver had not yet become affected.

We must not despair of witnessing the recovery of a drunkard with Yellow Fever, but the proverb "There is a God for the drunkard" does not hold good in this disease.

Type: Very Grave Yellow Fever. Hemorrhages. Black Vomit.

Typhoid Aspect.

No. 26—OCT. AND NOV., 1878.



Recovery.

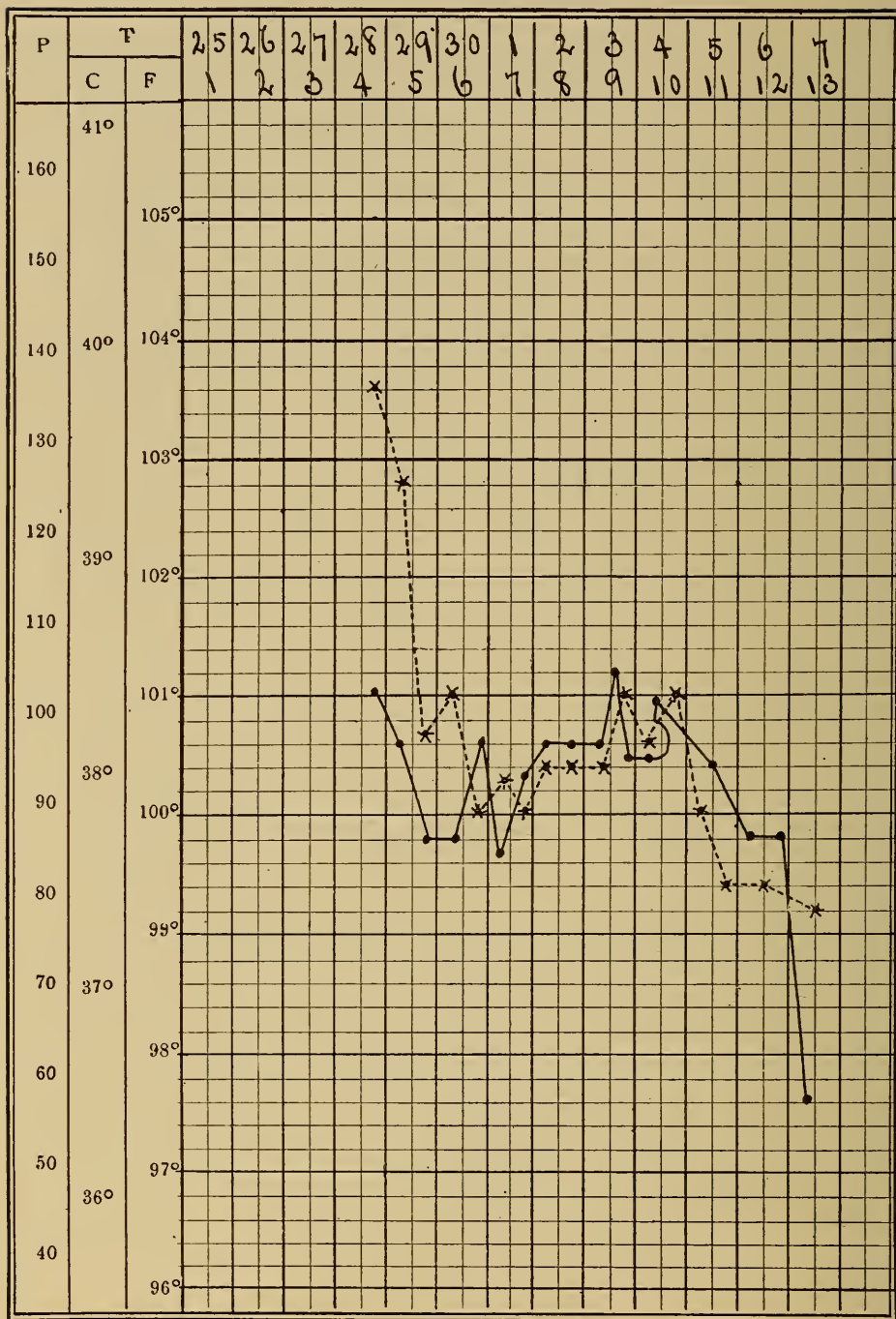
OBSERVATION NO. 26.

This observation is very remarkable, typical, and instructive. The fall in pulse rate was progressive from the outset of the disease to convalescence, with two slight increases in rate on the ninth and the thirteenth day, same having fallen from 118 to 48 pulsations. The temperature was 103.8 deg. on the fourth day; and, during fifteen days, the fever remitted in the morning with exacerbations at night, presenting the broken descending curve which is observed in typhoid fever of average intensity, finally falling to 96.8 deg. Classical Faget's law.

This patient was only 20, healthy and temperate, having lived two years in New Orleans. He had in a rather pronounced manner all the symptoms of the congestive period; the urine remained abundant during the entire disease and albuminous, from 5 to 10 per cent., even during convalescence. A light icterus appeared on the fifth day, becoming very intense and involving the entire body on the eighth day. On the ninth day, delirium, bleeding of the gums; on the eleventh day, the patient seemed pretty well, but on the twelfth he had black vomit and black stools. Black vomit lasted only one day, but frequent bleeding of the gums and black stools persisted during four days. On the sixteenth day a profound anemia and extreme feebleness threatened a fatal termination. However, repeated sponging with hot vinegar and the administration of coffee, broth, and wine in small doses by the stomach and by the intestines assisted the organism to rally. The patient slept well on the eighteenth and nineteenth days and became convalescent. I kept him in bed over a month, fearing a relapse or a fatal syncope on account of his extreme feebleness,

Type: Very Grave Yellow Fever. Black Vomit.

No. 27—SEPT. AND OCT., 1870.



Recovery.

OBSERVATION NO. 27.

Chart No. 27 represents the curves of the disease in a person 40 years old who had a very grave attack of Yellow Fever, with intense icterus, albuminuria and black vomit, and who nevertheless recovered.

Yellow Fever at that age and above is always very grave, and, according to my experience, nearly always fatal during severe epidemics. For there are epidemics and epidemics; the virulence of the microbe is not always the same. I shall explain my ideas and furnish proofs on this question in the chapter on prognosis.

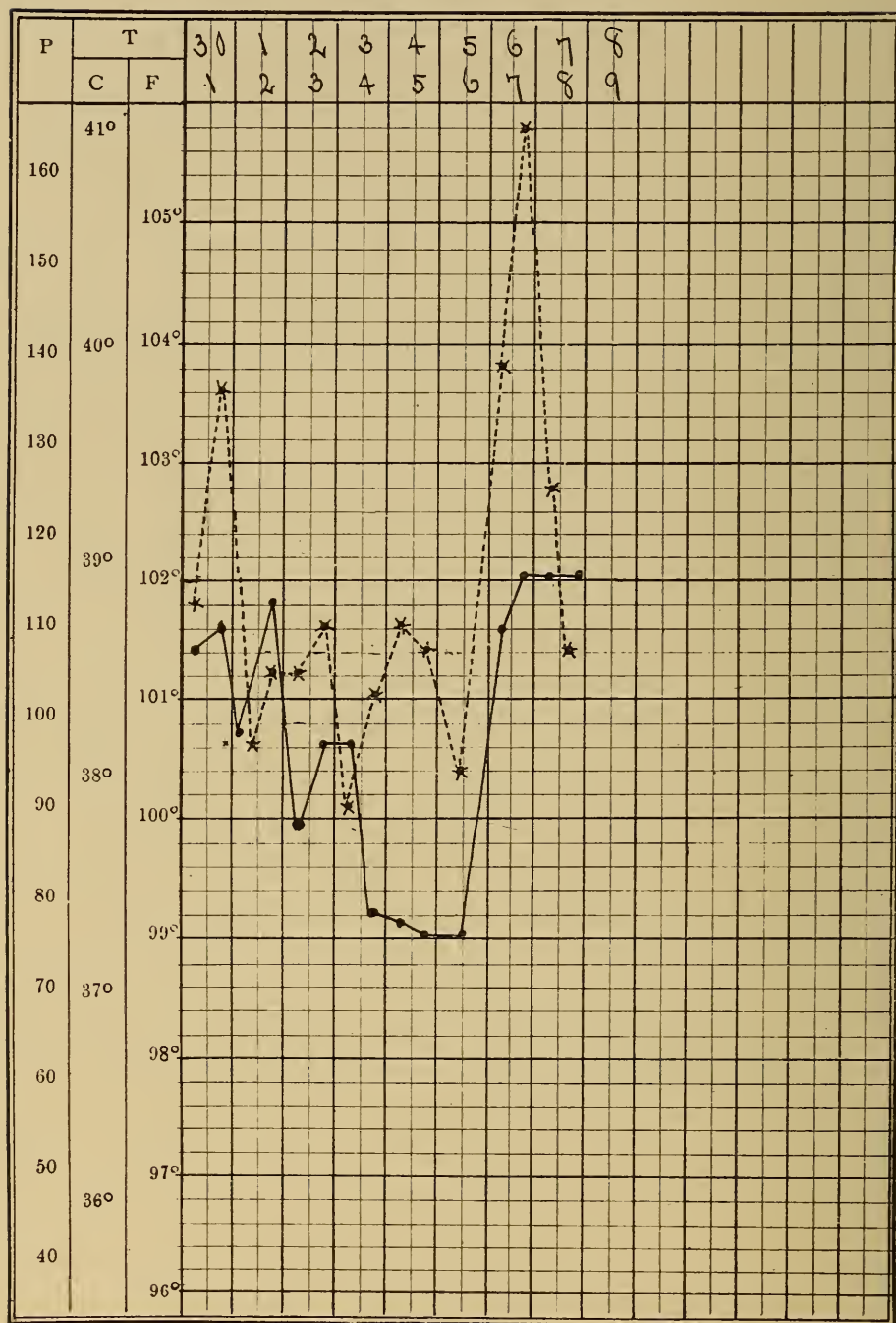
I saw the patient only on the night of the fourth day. He seemed in a desperate state, with black vomit; severe epigastric and abdominal pains, gums bleeding; but he could urinate, and the urine contained only 15 per cent. of albumin. The patient was very much depressed, but a symptom which gave some hope was that his temperature was yet high, nearly 104 deg. Black vomit generally brings about a rapid defervescence, the fever falling three or four degrees. In the cases that recover the fever remains at between 102 and 104 deg.

Black vomit lasted only one day, and the urine became more abundant; after seven days of variations in the pulse and temperature, without considerable elevation, the latter became nearly normal, the pulse falling to 62 pulsations. The patient became convalescent on the thirteenth day of the disease, very yellow and very anemic.

When Yellow Fever lasts more than ten days it often ends in recovery.

Type: Yellow Fever and Alcoholism. Atypic Curves.

No. 28—SEPT. AND OCT., 1878.



Death.

OBSERVATION NO. 28.

This case has absolutely abnormal and atypical clinical curves of the pulse and the temperature ; with the tracings alone, without clinical history, it would not cause us to think of Yellow Fever.

This young man, aged 18, since two years in New Orleans, is a bartender in a well-stocked grocery ; he has both a taste for alcoholic liquors and the uncontrollable desires of the dypsomoniac ; he is crazed by alcohol. I had already treated him for an attack of acute alcoholism with delirium tremens.

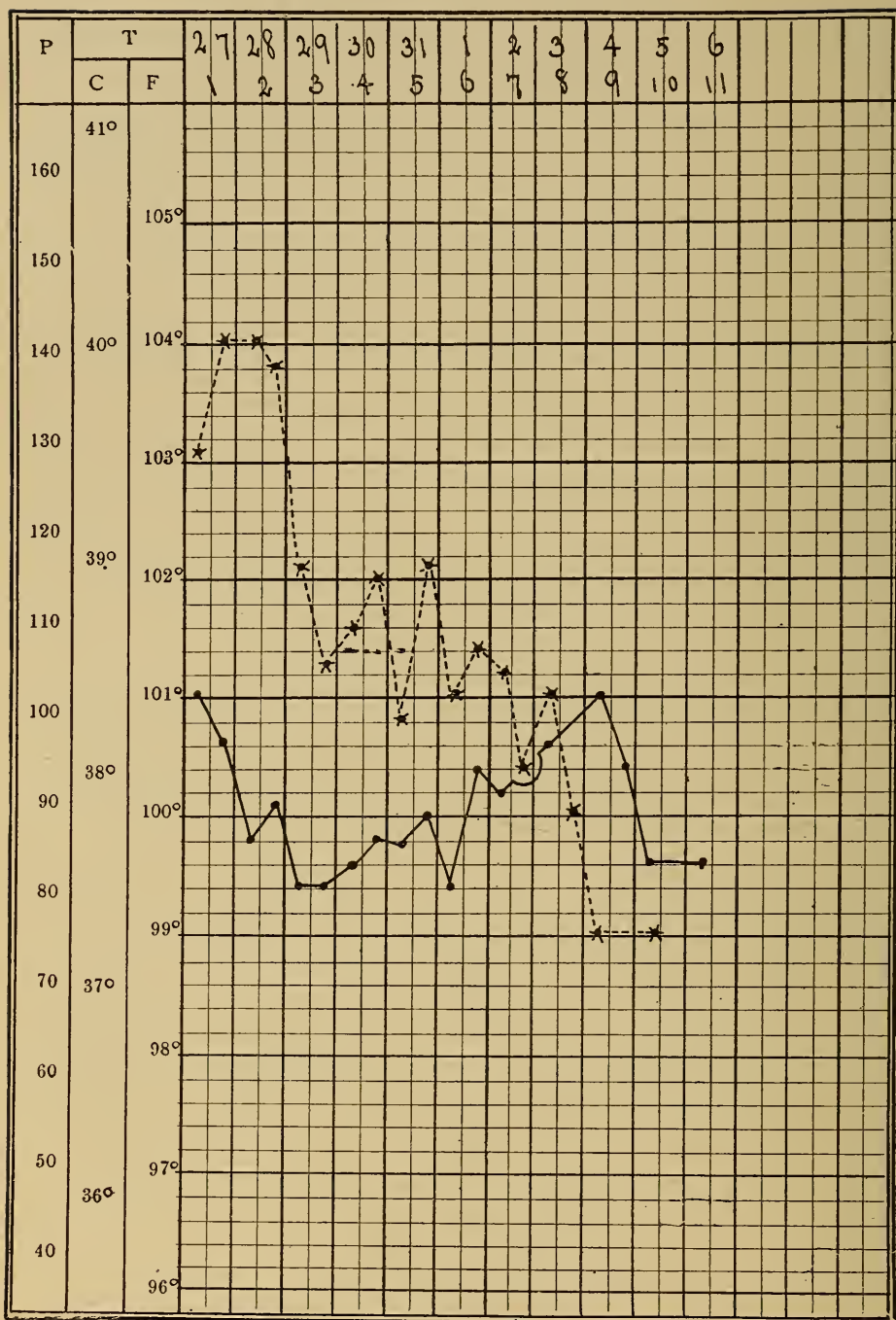
He became ill with Yellow Fever, having the congestive symptoms of the outset : chill, cephalagia, rachialgia, but, particularly, uncontrollable vomiting and profuse sweating. On the second day, the urine was 40 per cent. albuminous, icterus appeared on the third day, general condition very bad, delirium, restlessness, nausea, constant vomiting.

Bleeding of the gums and scanty urine on the fifth day, at which time the fever rose like a rocket, 5.4 deg. in thirty-six hours. Delirium, excessive restlessness ; had to be placed in a strait-jacket. On the night of the eighth day, very abundant black vomit ; no more urine, and death.

The symptoms were normal, but the fall of the pulse and Faget's law absent. This young man had a temperature of 106 deg. toward the end of the disease, which announced death ; usually it is reached on the first or second day. The curves of the pulse and the temperature of the last three days are the curves usual during the first three days of Yellow Fever ; they are inverted. This observation is both rare and curious.

Type: Grave Yellow Fever. Black Vomit.

No. 29—AUGUST AND SEPTEMBER, 1870.



Recovery.

OBSERVATION NO. 29.

A very grave case of Yellow Fever which terminated in recovery, notwithstanding abundant black vomit lasting during two days.

In commenting upon this observation, I desire particularly to call the reader's attention to the course of temperature during the occurrence of black vomit, as it is very important to learn it well for the sake of prognosis.

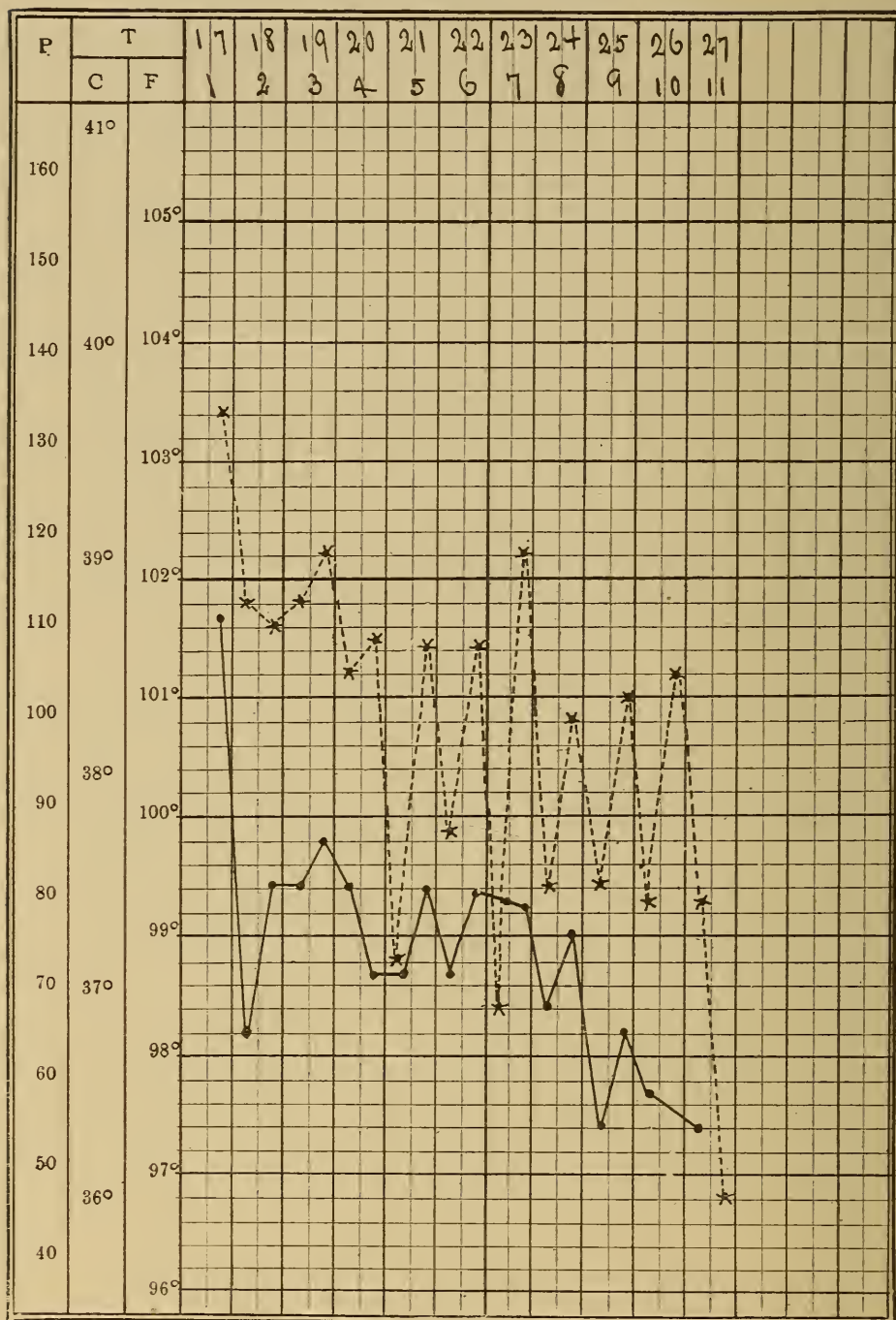
The case began with a high temperature, 103.1 deg., rising and then remaining during thirty-six hours at 104 deg. The third day there was a remission of nearly two degrees, a very favorable symptom which led me to expect a rapid recovery. There was light icterus on the fourth day and abundant black vomit on the fifth day. Ordinarily black vomit causes the temperature to fall, the more rapidly as the disease is the more virulent. In this case the temperature rose a few tenths of a degree. The vomiting continued on the sixth day, the fever remaining between 101 and 101.4 deg.

In such cases I allow the bleeding stomach to remain absolutely and completely at rest. No remedy, for such is useless, irritating, and increases the vomiting. I gave enemata of coffee and of broth, and warm frictions with vinegar were made every half-hour to stimulate the peripheral circulation and prevent collapse. Black vomit having ceased, the patient entered with difficulty into convalescence, in a very anemic state.

I treated this patient in 1870. The epidemic was of medium intensity and he was only 19 years old. A patient at that age or below with black vomit has 30 per cent. more chances of recovery than an adult over twenty-five years of age.

Type: Yellow Fever.—Pregnancy.—Suppurative Parotiditis.

No. 30—AUGUST, 1870.



Recovery.

OBSERVATION No. 30.

The patient, whose chart is No. 30, was a young woman 25 years old, in the eighth month of pregnancy, a primipara. She was very nervous and very much frightened, especially on account of her advanced pregnancy.

It was the first time that I treated Yellow Fever in a pregnant woman, and I did not feel at all reassured. In 1878 I treated two other ladies—one two months pregnant, who aborted twelve hours after the outset of the fever and who recovered ; the second three months pregnant, who aborted, had black vomit and profuse uterine hemorrhage, and died.

The symptoms in our patient was very pronounced at the outset—chill, cephalalgia, rachialgia and nausea during twenty-four hours.

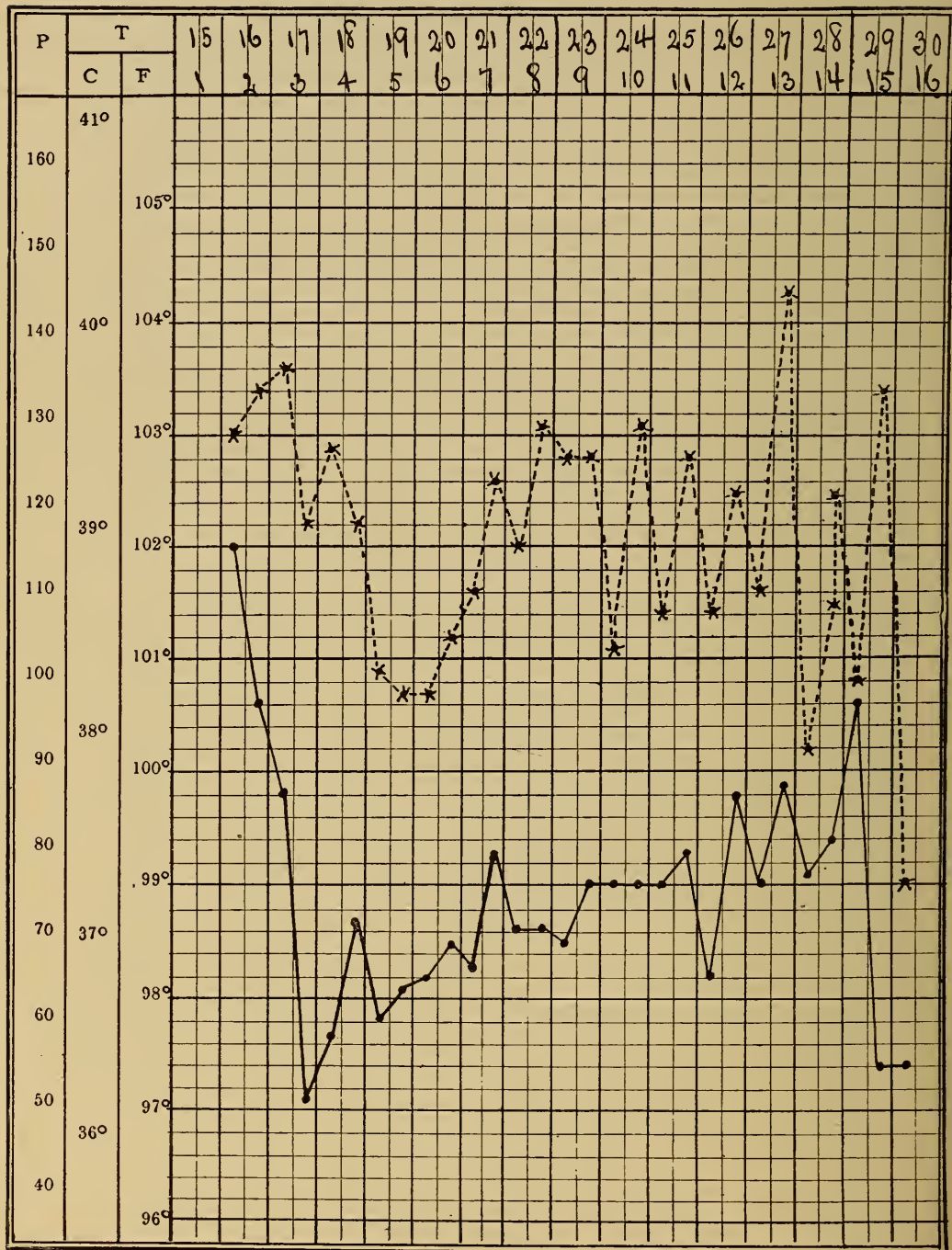
The fever was not very high ; the fall of the pulse was very accentuated during the first thirty-six hours ; then there were slight variations of the pulse and the temperature, the general condition remaining good until the fifth day, when everything seemed ended, without icterus, without albuminuria ; the temperature normal and the pulse 76.

During the night of the fifth day fever rose again, a painful swelling appeared at the angle of the upper jaw on the right, with redness and active inflammation. On the sixth day the swelling increased and strong throbbing pains were felt. Dr. Chopin opened the abscess on the eighth day, finding pus only very deeply.

After evacuation of the pus, convalescence was established. A month later the patient gave birth to a fine healthy child. When pus is formed during Yellow Fever recovery follows. In febrile infectious diseases parotiditis is always serious.

Type: Very Grave Yellow Fever. Eethyma Pustules. Sloughing.
Late Black Vomit and Epistaxis.

No. 31—SEPTEMBER, 1878.



Recovery.

OBSERVATION NO. 31.

This observation is interesting. The outset in this young man of 15, was not marked by a very high temperature, 103.8 deg. on the third day. The dangerous temperatures are those between 104 and 105 deg., lasting two and three days, and the very dangerous temperatures those above 105 deg. during the first two days.

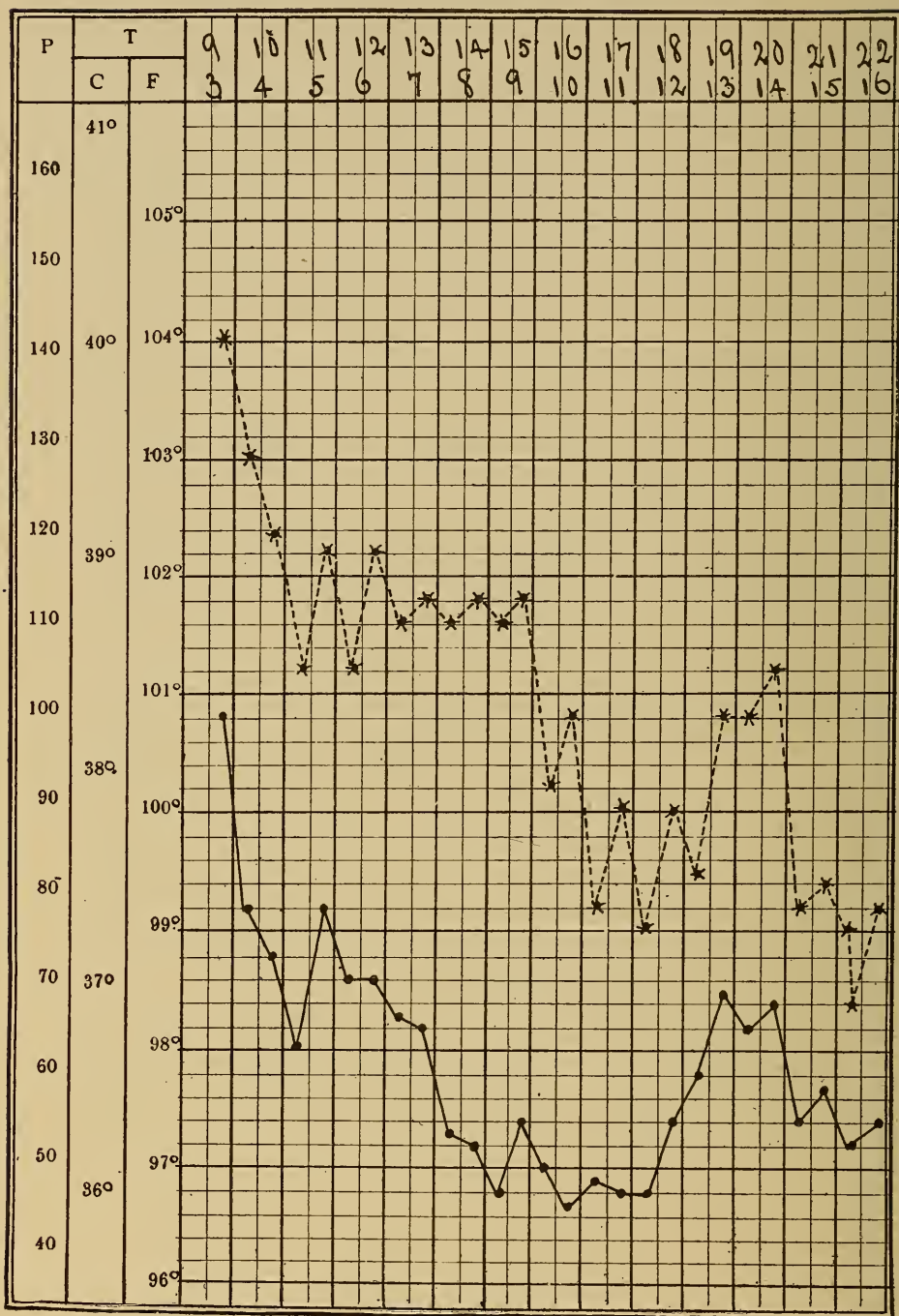
The progressive fall of the pulse and Faget's law are both well accentuated. Notwithstanding light delirium on the fourth day and moderate albuminuria, 10 per cent., and slight icterus, everything led to hope for the beginning of convalescence when, on the sixth day, very inflamed ecthymatous pustules appeared on the dorsum of both feet, increasing the fever, producing sloughing of the skin and a secondary infection which led to the recrudescence of the disease. General condition became bad, sleep disappeared, fever rose on the thirteenth day to 104.5, black vomit survened on the fourteenth day, abundant, but lasting only twelve hours; on the sixteenth day a pronounced epistaxis, then a sensible amelioration and entrance into convalescence.

The long duration of the disease, the abnormal features; black vomit on the fourteenth day and a critical epistaxis on the sixteenth, a deplorable general condition, the local condition of the feet, with sloughing of part of the skin—all led to fear a fatal termination.

His youth saved him. The fever at the outset did not indicate great virulence and the patient formed pus; according to my experience one making pus during Yellow Fever is likely to get well.

Type: Very Grave Yellow Fever. Black Vomit.

No. 32—AUGUST, 1870.



Recovery.

OBSERVATION NO. 32.

The young woman furnishing clinical Chart No. 32 was 21 years old, strong, sound, and enjoying good health previous to this disease.

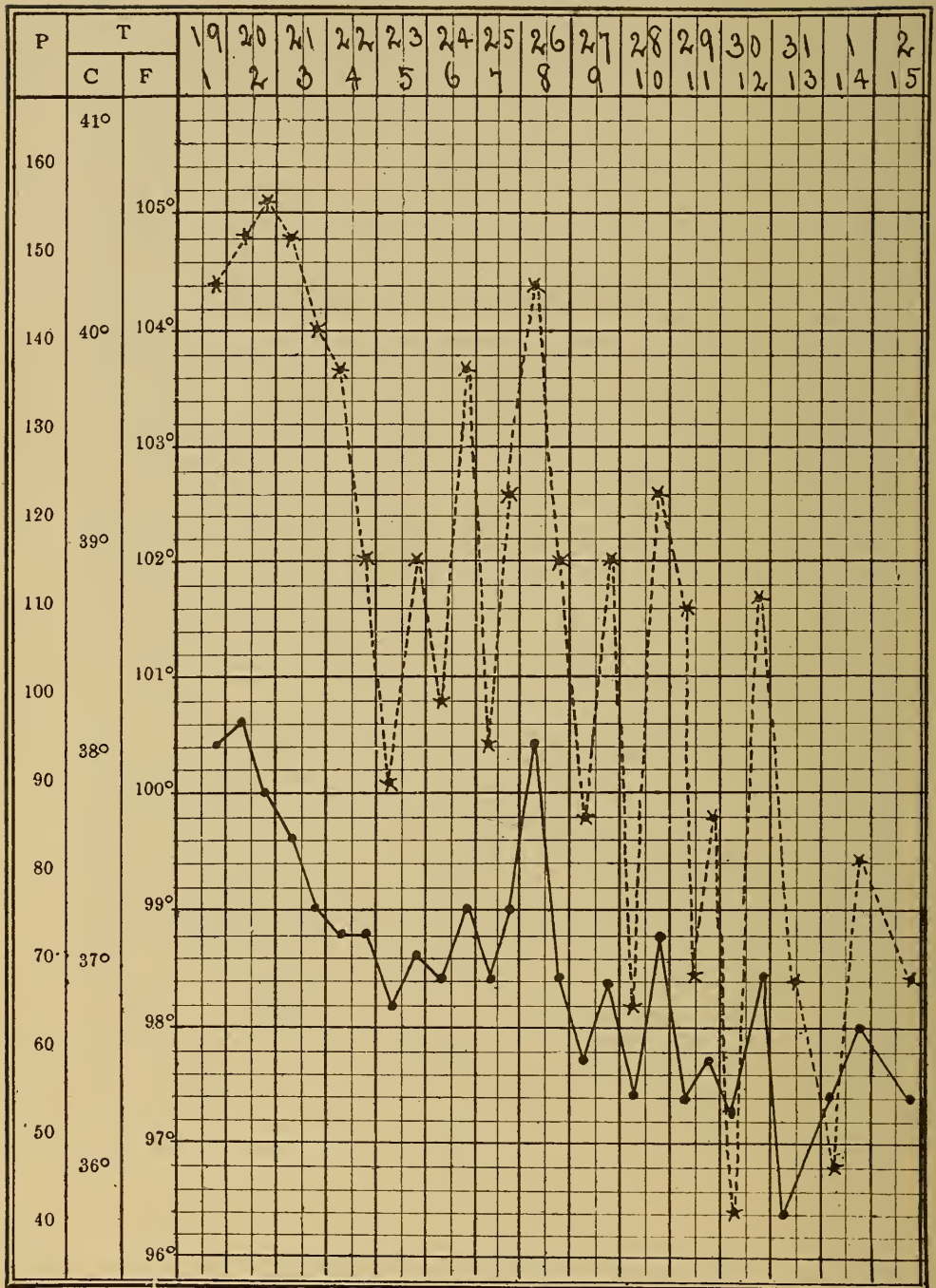
She fell ill on August 6, 1870, but I saw her only on the 9th, the third day of the disease. She had black vomit, icterus, rather copious urine, with 5 per cent. of albumin. Black vomit lasted three days, without being very abundant. In women, black vomit does not present the same degree of gravity as in men. Women, children, and adolescents often have black vomit and get well; after twenty-five, recovery from Yellow Fever with *vomito negro* is rare.

In nearly all cases of black vomit the temperature falls rapidly. In this case the temperature remained elevated between 101 and 102 deg. during five days, then a slow defervescence began. The patient no longer vomited, was urinating in large quantities, and was sleeping. Sleep in Yellow Fever is an excellent symptom, announcing recovery.

On the fourteenth day the famished patient partook of too much nourishment and had *carnis fever* which yielded to strict diet. Frequently errors of diet during convalescence produce indigestion, the return of fever and recrudescence of the disease, most frequently followed by death. A severe regimen must be insisted upon and the patient be allowed to rise only when the pulse has become normal and strong.

Type: Yellow Fever and Malaria.

No. 33—OCTOBER AND NOVEMBER, 1870.



Recovery.

OBSERVATION NO. 33.

Physicians were formerly strong believers in the complication of Yellow Fever by malaria. The study of Yellow Fever with the thermometer has demonstrated to me that it is exceedingly rare that these two affections are evolved together or mixed. During a long practice I have seen only two cases of malarial fever following an attack of Yellow Fever. I observed in September, 1897, a case of Yellow Fever with high temperature which presented, after four days of illness, a very acute attack of malaria fever with complete intermissions, the fever rising to 105.3 deg. The patient recovered after large doses of quinin.

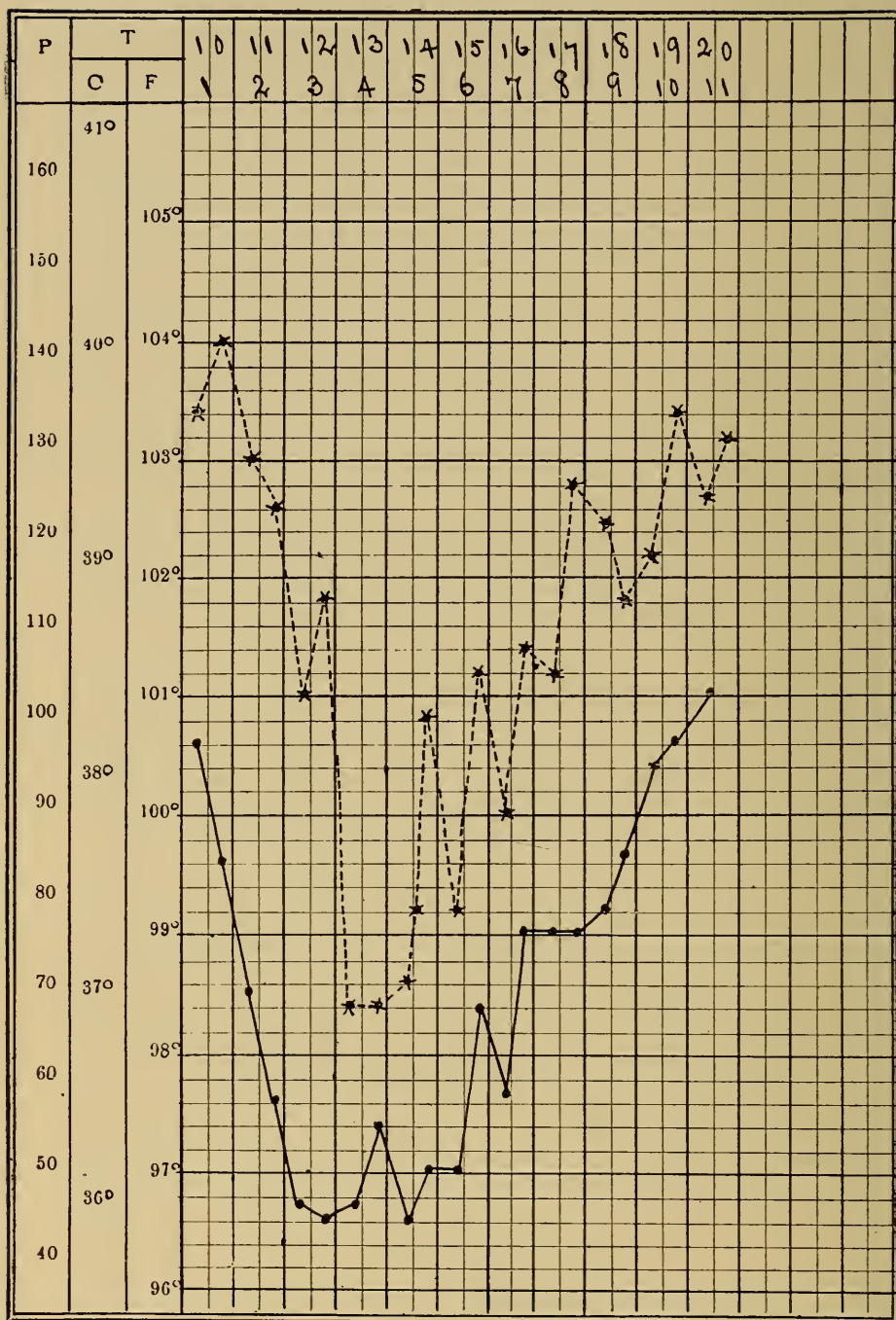
The second case, which is the more typical, is very rare, I believe. I had already treated him for malarial fever. He was a gardener, aged 25. All the symptoms of congestion were quite accentuated. On the second day the temperature rose to 105.2 deg., announcing a grave case. By means of cold sponging, of a purgative and of large doses of sulphate of quinin, which were well borne, I brought about defervescence, and the temperature dropped to normal on the fifth day. Fall of the pulse, Faget's law and icterus are evident.

Until the fifth day the tracings of Yellow Fever, with very high temperature, are classical; then, the general condition remaining good, paroxysms of malarial fever with chill, elevation of temperature, and perspiration at the time of remission occurred during ten days. The spleen was large and tender.

Forty to fifty grains of sulphate of quinin daily, cold infusions of cinchona, followed by arsenious acid, arrested the paroxysms only on the fourteenth day. The patient entered convalescence on the fifteenth day, cured both of Yellow Fever and of malaria. He had five days of Yellow Fever and ten days of fever accompanied by the classical clinical curves of acute and intermittent malaria.

Type: Mild Yellow Fever.—Relapse.

No. 34—SEPTEMBER, 1870.



Death.

OBSERVATION NO. 34.

Chart No. 34 shows the curves of the pulse and the temperature of Yellow Fever in a young woman aged 24, healthy, though nervous, living in New Orleans since five years.

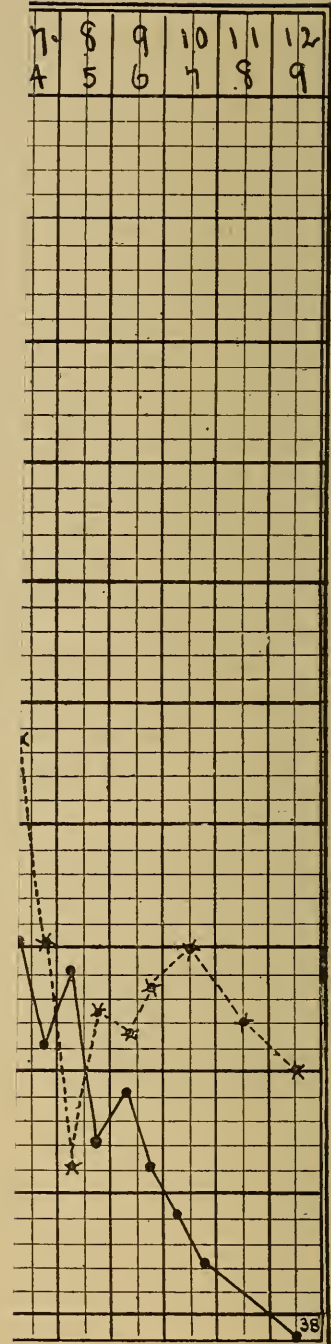
The disease was ushered in by the characteristic symptoms of the period of congestion, violent headache, aching of the limbs, acute rachialgia, nausea during twenty-four hours and moderate fever, 103.4 deg. Twelve hours later the temperature rose to 104 deg. The progressive fall of the pulse and defervescence of the fever occurred in parallel lines as in all very mild cases of Yellow Fever.

On the fifth day everything seemed well; pulse, 50, temperature, 98.4 deg., when the fever returned. What was the cause? I can not certify to it as the fact was not acknowledged, but believe it was sexual imprudence.

At any rate, during the second attack the fever rose five days consecutively. The pulse was in correlation with the temperature and rose daily, also, until death. The kidneys about ceased functioning on the eighth day, the scanty urine containing 60 per cent. of albumin; icterus was very intense; black vomit, without being very abundant, was frequent during the last three days.

This is a striking case of relapse, the curves no longer having the physiognomy of those of Yellow Fever; and, as is ordinarily the case, the relapse followed a light attack. Too many precautions can not be taken during convalescence.

th Times.



OBSERVATION NO. 35.

This observation is probably unique in the clinical history of Yellow Fever. It is that of the case of a young man aged 17 who, twelve hours after the outset of Yellow Fever, had a temperature of 106 deg. The treatment led to a defervescence in five days. Black vomit survened on the sixth day, lasting only a day. During ten days there were very marked variations of temperature, and it is only on the fifteenth day that the patient entered into convalescence; he was very yellow, very feeble, having abundant urination and albuminuria no longer.

The patient remained thirty days without fever, eating and sleeping well, regaining his strength. At this time he was taken with a second attack of Yellow Fever, or rather a relapsing Yellow Fever.

The second attack was again very virulent, the fever rising to 104.4 deg. Black vomit and black stools occurred on the fifth day with a sudden defervescence of fever down to 97.2 deg., which seemed to announce the end.

However, the patient was young, without organic taint, and had completely recovered from the first attack. The temperature rose again by means of frictions with hot vinegar, of stimulants such as syrup of ether, acetate of ammonia and coffee. The black vomit ceased and the patient entered into convalescence on the ninth day, with a normal temperature and a pulse beating thirty-eight times a minute, lower than I have ever met with.

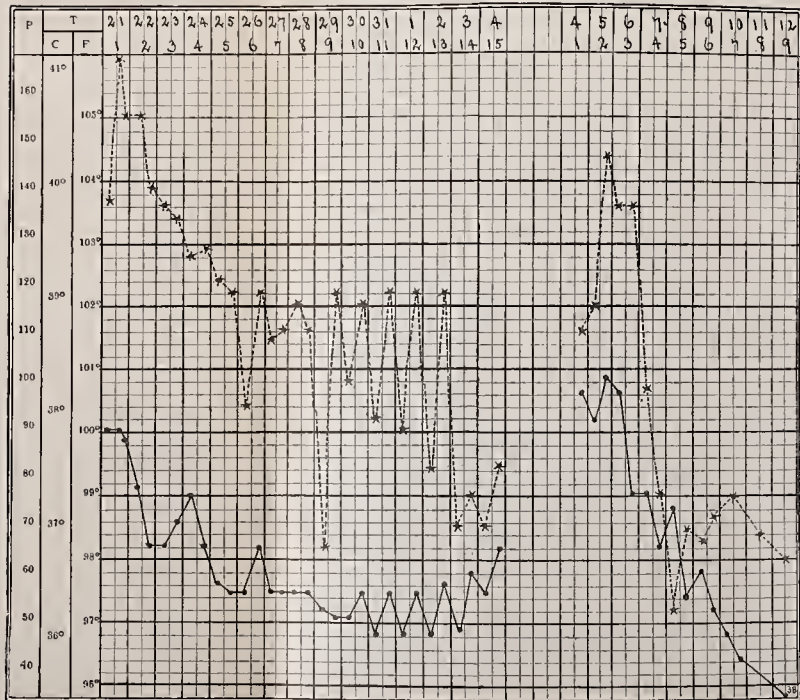
There was albuminuria during both attacks, varying from 10 per cent. to 15 per cent.; icterus was very pronounced, especially during the first attack.

The fall in pulse rate and Faget's law were evident both times.

The temperature was quite elevated, even up to 106 deg., but the acme of the disease was not of long

Type : Very Grave Yellow Fever. Very Serious Relapse. Black Vomit Both Times.

No. 35—AUGUST, SEPTEMBER AND OCTOBER, 1878.



Recovery.

duration ; in both instances defervescence occurred after twelve hours, almost without interruption.

Black vomit occurred on the sixth day, the first time, and the fifth in the second attack ; it lasted only twenty-four hours.

The yellow toxin lessened the rapidity of the heart's action to an extraordinary degree the second time, the pulse having fallen to 38. What is as consoling as remarkable is that the patient recovered notwithstanding the fact that both attacks were intensely virulent.

Relapse ordinarily occurs after a light attack or one of moderate intensity and usually after twenty-four or thirty-six hours of false convalescence, or after an imprudence, the patient rising, walking, or having indigestion from excess in eating.

In this case the relapsing fever occurred thirty days after the end of the first attack, the patient not having yet left the hospital. He remained two months under observation and treatment.

CONCLUSIONS.

I could multiply these charts of the pulse and temperature, and could publish many other observations, but they would be similar and without important interest.

Hence, I limit this exposition of clinical curves, as I believe that I have presented to the reader the most frequent forms and the principal types of Yellow Fever as influenced by the age of the patient, by the virulence of the disease, by organic taints, by auto-infection and by secondary lesions.

This work is entirely individual; it is written only in the light of my clinical experience and aided by the study and comparison of several hundred observations collected entirely by me.

However, as I have seen, observed and studied Yellow Fever only in New Orleans, it is possible that other varieties may be met with elsewhere.

I hope that the study of my clinical charts will bring out the importance of the fall in pulse rate and the divergence between the pulse and the temperature in the diagnosis of typhus icteroides. With the group of symptoms which is so characteristic of the period of congestion, the physician should always recognize Yellow Fever.

Facts which are ever to be remembered are as follows:

In mild cases the pulse and the temperature fall without interruption in parallel lines. In cases of moderate intensity, the fall in pulse rate is uninterrupted and progressive, accompanied by elevation and variation of temperature, lasting twenty-four and seventy-two hours. In grave cases the fall in the pulse rate is progressive during three days, the fever

ranging during three and four days between 103.5 and 104.5 deg., with exacerbations at night and remissions in the morning. In very grave cases, the pulse diminishes in frequency progressively, or remains stationary during several hours, while the temperature rises rapidly in twelve or eighteen hours, to the dangerous and frequently fatal zone of 105 deg. and above. In the very virulent and most often fatal cases of Yellow Fever, without predominating organic affections, the fall in the pulse is progressive and very accentuated, the temperature reaching from the outset of the disease 105 deg., or above. In cases of Yellow Fever, accompanied by organic taints produced by alcohol, excessive work, or, briefly, excesses of all kinds, the fall in the pulse rate is manifest, the temperature rising beyond 105 deg., or ranging between 104 and 105 deg., with rapid deferescence in almost a perpendicular line, when black vomit begins and the patient is to die, and remaining at an elevation between 101 and 104 deg., when the patient has chances of recovery.

Hence, it is the clinical chart of the pulse and the fever which furnishes the most useful indications for diagnosis, prognosis and treat-

ment. In a disease as virulent and with as rapid a course as Yellow Fever, it is of inestimable value to have as guides in the care of the patient two indicators as precious and positive as the watch and the thermometer, which never deceive the physician.

I know of no febrile infectious disease in which the physician can within the first twenty-four hours, after several examinations of the patient and his symptoms, and of the pulse and the temperature, be so usefully and completely enlightened as he can be in Yellow Fever.

CHAPTER IV.

YELLOW FEVER IN CHILDREN—CLINICAL CHARTS OF PULSE AND TEMPERATURE—OBSERVATIONS.

Thirty-five years ago the dogma was that children born in New Orleans never contracted Yellow Fever.

It was the fixed opinion of all the most distinguished physicians of that city. Dr. Deléry was the only refractory one; he proclaimed against these erroneous ideas, and with much good judgment and clinical sense declared that Creole children did have Yellow Fever, but ordinarily in a very light form.

During the epidemic of 1866 and 1867, by studying this disease in children with the aid of the thermometer, I found the same symptoms, their same succession, and the same curves of pulse and temperature as in the adult. My observations came to strengthen and demonstrate the ideas of Dr. Deléry. Wishing to cause them to prevail, I had, thirty

years ago, an animated debate with my friend, Dr. Faget, who was the most eloquent and bitter defender of the theory of the absolute immunity of Creole children.

Legends die hard; this one succumbed only after the epidemic of 1878, when the disease attacked a large number of children and was observed by means of the thermometer by all physicians.

Yellow Fever is exceedingly mild in children if disturbing treatment is not resorted to.

According to my experience it is certainly lighter than measles, and, as far as I am concerned, I would prefer to treat one hundred cases of Yellow Fever in children than seventy-five of measles. I would certainly have a smaller mortality in Yellow Fever.

This benign type of the disease is what had led to the belief in the immunity of children born in New Orleans. Every year up to 1878 there were a few or many cases of Yellow Fever. Children became acclimated by taking the disease during infancy; the attack of fever lasted one, two, or three days without alarming symptoms and caused no uneasiness to the family. Children nearly always recovered, and the cause of the indisposition was unrecognized. It was really Yellow Fever,

however—acclimating fever, attenuated Yellow Fever.

The grave or fatal cases were credited to malaria and a new morbid entity had even been invented for the occasion, Hemorrhagic Malarial Fever, which existed and was observed only at times of epidemics of Yellow Fever and which was nothing else than Yellow Fever in the Creole, accompanied by black vomit.

By means of the thermometer I did justice to these erroneous ideas, which, as I said to Dr. Faget, were an outrage on General Pathology.

Yellow Fever in children presents the same form and the same type as in adults; the fall in pulse rate and Faget's law are as characteristic; the invasion is the same and the symptoms of congestion are alike. Nausea and vomiting are more frequent, as well as epistaxis; the pulse does not always show a fall, as it is influenced by the nervousness, the tears and cries and the movements of the child.

I shall publish a few clinical charts of Yellow Fever occurring in young children, including light, grave, and fatal cases; in comparing these charts and observations with those of adults, it will be plainly shown that the disease is always the same. Age does not change the

physiognomy of the disease, but only attenuates its virulence.

During an epidemic of Yellow Fever anxiety for the children almost crazes the parents ; for their sake one is frightened, and without reason, as the mortality among them is almost *nil*.

In 1878, I had under my care 103 children ; of these, eleven had slight black vomit and I only lost two, observations of whom I shall publish.

The epidemic of 1897 was very much milder than that of 1878. It prevailed especially among children. The mortality was exceedingly light ; assuredly not one case in 200 sick children.

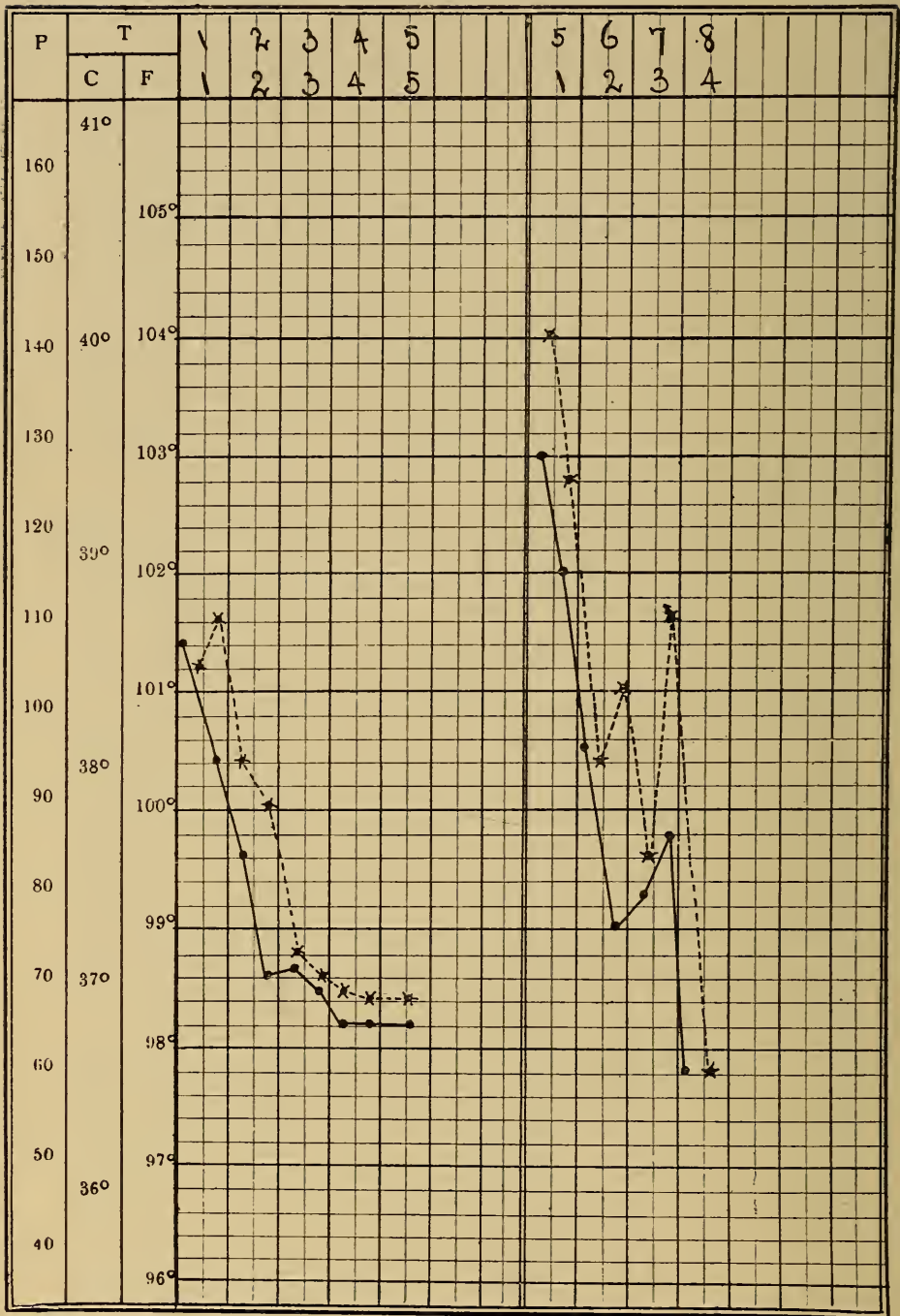
Several physicians whom I could name treated more than 100 children each with Yellow Fever last year without a single death. Hundreds of families, terrified by odious measures of house quarantine, treated their own children without calling in any physician and with the greatest success.

I mention these facts in order that, during times of epidemics of Yellow Fever, parents, and especially mothers, may not become alarmed and lose their head, for I can not repeat too often : in children, Yellow Fever properly treated is less dangerous than measles.

Type: Mild Yellow Fever.

No. 1—SEPTEMBER, 1878.

No. 2—SEPTEMBER, 1878.



Recovery.

Recovery.

OBSERVATIONS NO. 1 AND NO. 2.

The child whose observation is No. 1 was a robust boy aged $8\frac{1}{2}$. While in full health he was taken with a chill and fever, and violent headache ; severe pains in the back ; aching in all the limbs ; nausea and vomiting, first of aliments, then of mucous substance.

Three of his sisters had the fever during the same epidemic and one of them died.

During the course of the disease, the two curves of the pulse and temperature ranged in parallel lines, the fever rising at the second visit .4 deg., the pulse decreasing by fifteen pulsations. Faget's law. No albumin or icterus.

The child whose chart is No. 2 was a strong, healthy, big boy who had never been sick before. He was suddenly taken with fever, at 104 deg. ; violent cephalalgia and rachialgia ; restlessness, and vomiting. Children react in a more pronounced manner and show all the symptoms of invasion to a greater extent than adults. During three days the fall in pulse rate and defervescence of fever occurred in parallel lines. On the third day there was some collapse, extreme pallor, coldness, severe sweating.

Hot frictions and light stimulation, cognac, hot wine, and coffee, quickly overcame it. This occurrence frightens greatly but is without seriousness.

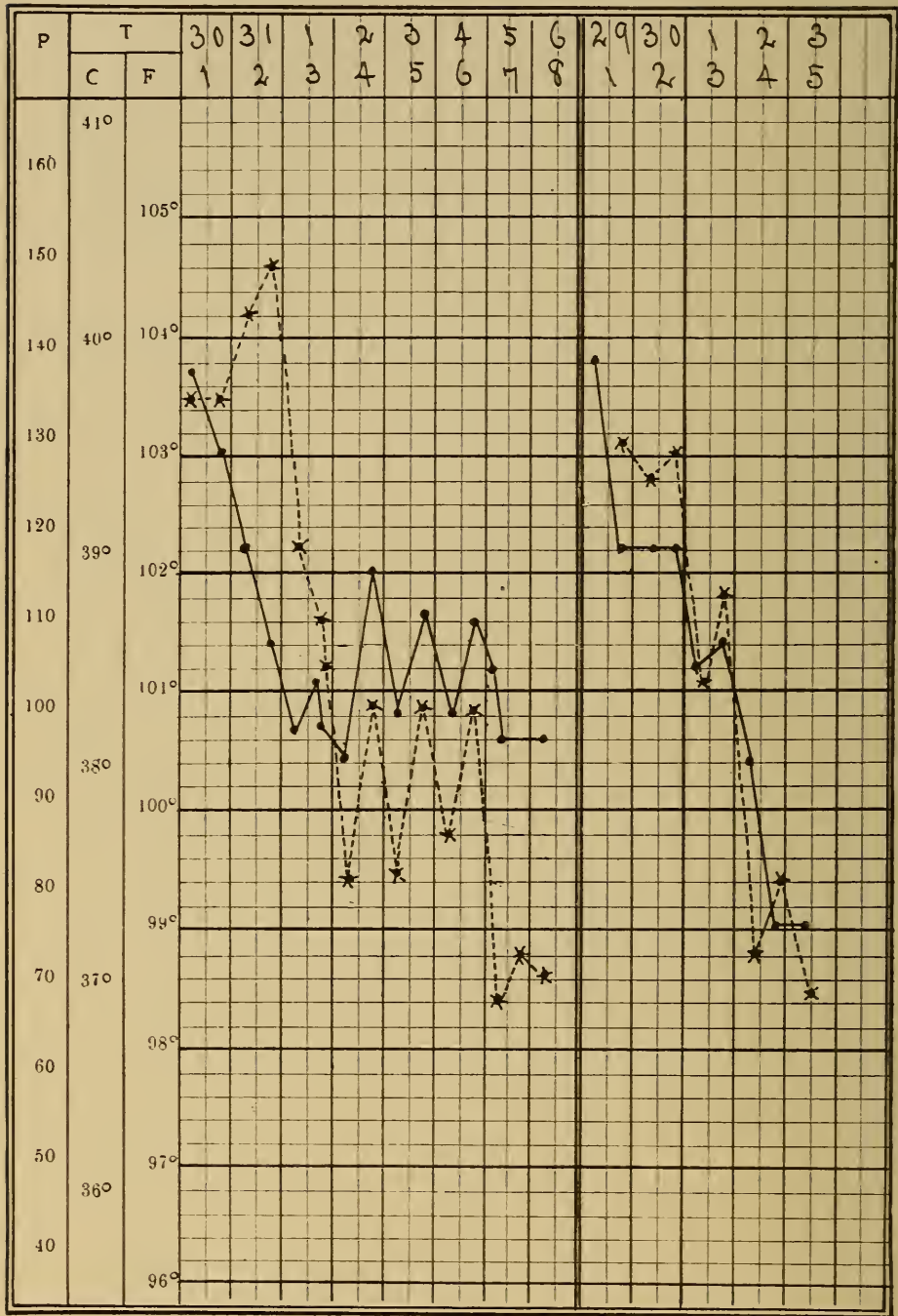
There was great feebleness during eight days, notwithstanding a voracious appetite ; such we must be careful not to satisfy.

Type: Yellow Fever of Moderate Intensity.

Mild.

No. 3—AUG. AND SEPT., 1878.

No. 4—SEPT. AND OCT., 1878.



Recovery.

Recovery.

OBSERVATIONS NO. 3 AND NO. 4.

The little girl whose chart is No. 3 was 4 years old, and had not been sick since birth. Yellow Fever was ushered abruptly, with high temperature, active congestion of the face. The child complained particularly of her head, was restless, crying and screaming. The temperature of 103.5 deg. at the outset rose in twenty-four hours to 104.6 deg. She was very nervous and had delirium. Tepid baths repeated every hour nicely produced a defervescence, the temperature falling to 99.4 deg. in three days. The fall in pulse rate is typical, progressive and uninterrupted during three days, then there are variations in the pulse until convalescence.

Faget's law is as well shown as in the adult. In forty-eight hours the temperature rises 1.1 deg., from 103.5 to 104.6 deg., and during that time the pulse diminishes from 140 to 100 pulsations, or a fall of 40. The law is as much pathognomonic in the child as in the adult. Convalescence was slow, extreme weakness lasting one month, appetite voracious; jaundice began on the fourth day, becoming more accentuated on the following days.

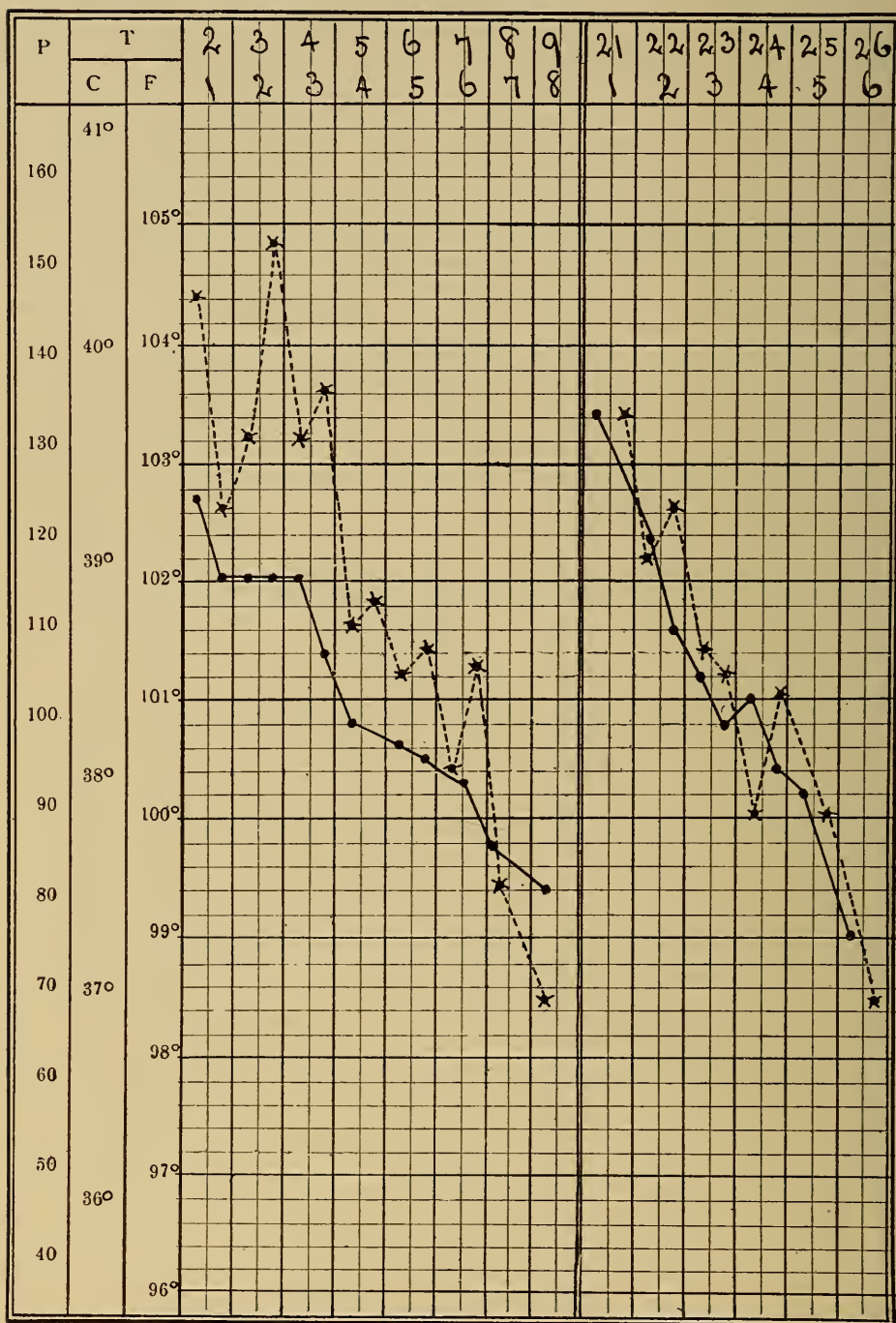
Chart No. 4 is that of a light case in a child 11 years old, taken suddenly in the night with fever; general aching, vomiting of aliments, and a congested face. There was epistaxis on the third day. Ordinarily in children epistaxis occurs during the first twenty-four hours.

Type: Yellow Fever of Medium Intensity.

Mild.

No. 5—OCTOBER, 1878.

No. 6—AUGUST, 1878.



Recovery.

Recovery.

OBSERVATIONS NO. 5 AND NO. 6.

In publishing these charts of Yellow Fever in children I desire specially to demonstrate that in the latter, as in adults, the pulse rate falls most frequently, or remains stationary, as in Chart No. 5, when the fever rises without the law of the fall in pulse rate being on that account violated.

The fever in Case No. 5, a child of 6, was very high, 104.4 deg., diminishing two degrees in twelve hours. The next day there is an exacerbation of 2 3 to 104.9 deg.

During this rise the pulse remained stationary at 126, beginning to fall progressively from the third day and continuing without interruption up to the time of recovery. Faget's law is characteristic. The only alarming symptom was the high temperature, which yielded to treatment consisting of tepid baths and cold sponging.

In Chart No. 6, child 9 years old, is shown a progressive and uninterrupted fall in pulse rate, the temperature falling also, except on the second day, when there was a slight exacerbation, .4 deg., the pulse diminishing by ten pulsations. Faget's law.

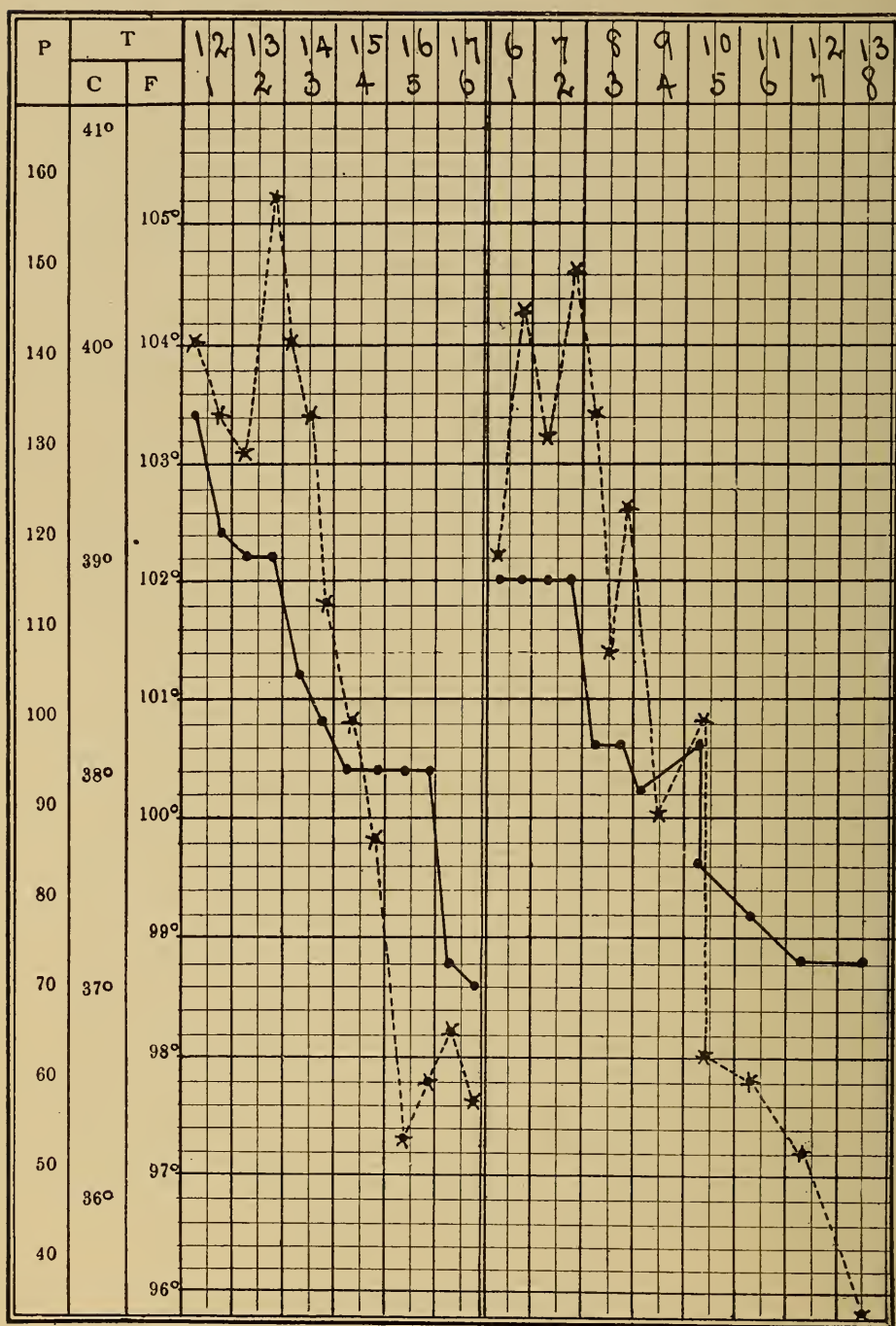
In 1867 I treated at this patient's house a young Frenchman, a nephew, aged 21. He had a severe attack of Yellow Fever, followed by recovery. There were then three children in the house, who all had a light attack of Yellow Fever. From 1867 to 1878 the family was increased by four other children. All four had Yellow Fever in 1878, and I nearly lost the child whose chart is No. 6. The oldest three, who had been sick in 1867, remained free. The seven children then had Yellow Fever—three in 1867, four in 1878; all recovered. In the same block there were in 1878 more than 100 cases with twenty-five deaths.

Type: Grave Yellow Fever.

Yellow Fever of Great Gravity.

No. 7—OCTOBER, 1878.

No. 8—OCTOBER, 1878.



Recovery.

Recovery.

OBSERVATION NO. 7 AND NO. 8.

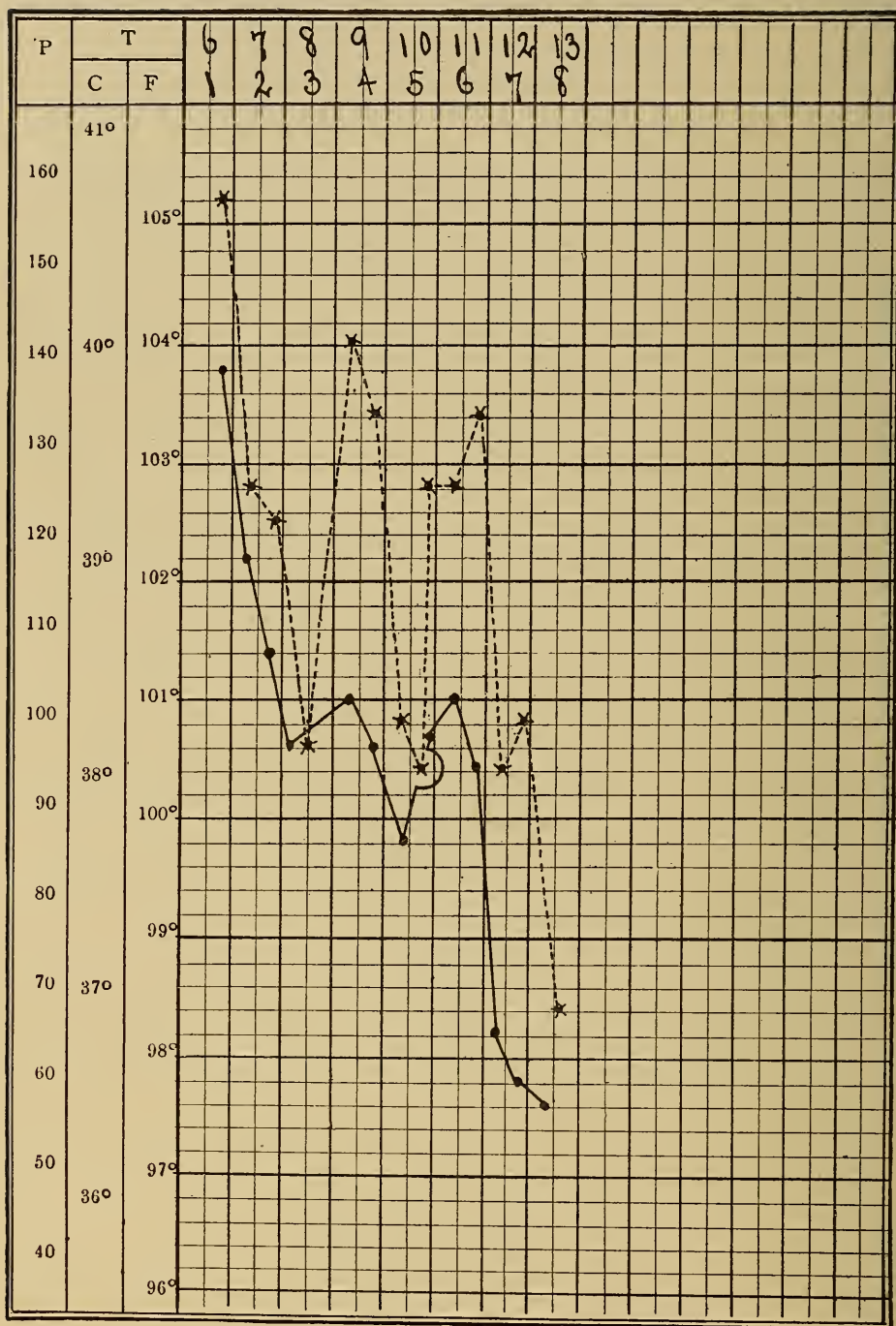
While in full health, P. P., aged 4 years, was taken with a high fever, 104 deg.; his face was red and glossy and he had nausea and vomiting during twenty-four hours. General aching; restlessness; dry tongue. Pulse 135. By means of cold sponging every hour and two baths, the fever fell one degree during the first twenty-four hours. The next day it rose 2.1 to 105.2 deg. Prostrated by this high temperature, the child fell into an alarming comatose condition which lasted several hours. I had him sponged every quarter of an hour until the temperature fell to 104 deg.; then every half hour and, by this treatment alone, a satisfactory defervescence was produced, the fever diminishing one degree daily during five days, or slowly, as occurs with a permanent fall. During the first two hours the sponging produced coldness of the surface with cyanosis, which alarmed the parents, but as the temperature was yet over 104.5 deg., I continued them, administering brandy at the same time. Convalescence was rapid.

Observation No. 8 is that of a child nine years old, who had Yellow Fever of a remittent type, with 5 per cent. of albumin on the third day. He had slight black vomit on the fifth day and icterus on the sixth. The temperature diminished intermittently during five days.

The pulse remained stationary during two days while the fever was rising. The temperature fell gradually during eight days to 95.8 deg. The situation was alarming on the third and on the fifth day, but the child recovered.

Type: Grave, Remittent Yellow Fever.

No. 9—SEPTEMBER, 1867.



Recovery.

OBSERVATION No. 9.

Rose S., a little child 8 years of age, was taken sick on the morning of September 6, 1878, with high fever and vomiting. I saw her at night; the fever was then very high, 105.2 deg., the pulse 140, and she was complaining of violent pains in the head, in the back and in the limbs. Her face was scarlet, and she was in a state of drowsiness out of which she roused only to vomit.

I ordered cold sponging every half hour, and prescribed digitalis and veratrum viride.

The fever during the first three days decreased, as well as the pulse, in parallel lines.

On the third day treatment was discontinued and light nourishment was given; but, as the fever rose again during the night, the cold spongings were resumed.

On the fourth day there was slight black vomit, and albumin showed in the urine. All food and drink were stopped, and there was no more black vomit by the fifth day.

On the sixth day jaundice was well marked, and by the eighth day the child was in full convalescence.

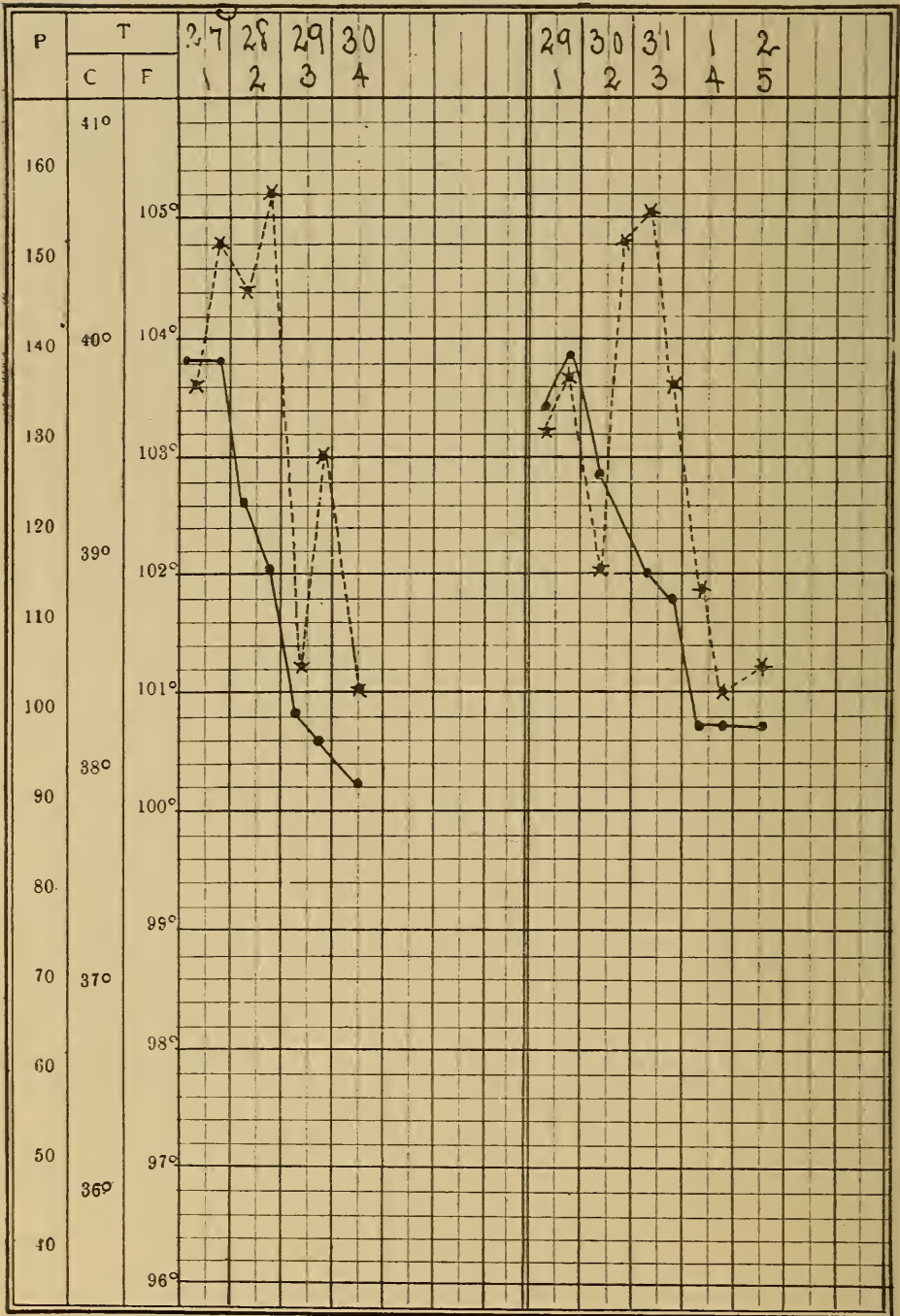
This observation is interesting, as it shows the danger of fever above 105 deg., in the case of a child, as well as that of an adult. The treatment by means of digitalis and veratrum acted on the symptom—fever, but the disease followed its regular course.

The pulse fell with but slight variations, notwithstanding exacerbations of fever of two degrees.

Type: Yellow Fever of Great Gravity.

No. 10—AUGUST, 1878.

No. 11—AUG. AND SEPT., 1878.



Death.

Death.

OBSERVATIONS NO. 10 AND NO. 11.

F. E. was a bright child, aged 8 years, of nervous temperament and enjoying good health.

She fell sick at 4 A. M., on August 27, 1878. High fever, 103.6 deg.; face glossy; repeated vomiting; violent pains of the head and back. By night she had become semi-comatose, her face being excessively pale and the fever had risen to nearly 105 deg.

On the second day the fever had again risen, being 105.2 deg., which was a symptom of grave import; the urine had become scanty and contained 20 per cent. of albumin. The comatose condition was persistent, and the child made only inco-ordinate movements. Her general condition was very serious. By the third day, no secretion of urine; black vomit abundant and frequent; she had black stools. Characteristic fall in pulse rate and Faget's law. Death on the fifth day. Cadaver was yellow, showing large ecchymoses.

No. 11.—This little boy, aged 4 years, was the brother of F. E.; he was taken sick two days later than his sister.

High fever; nausea; suffusion of the face; lumbar pains; tongue white. Fever fell 1.6 deg. during first thirty-six hours, but, during the night of the second day, it rose three degrees, reaching the very dangerous zone of 105 deg. The child was restless and delirious. Defervescence occurred on the third day. He vomited black several times, and the urine was scanty. Throwing his head from side to side, he had not a moment's rest. All might not have been lost, but, notwithstanding my prohibition, four fly blisters were applied by the mother, and the urine became entirely suppressed. Death on the fifth day.

CONCLUSIONS.

It is easy to find, in this collection of eleven clinical charts of the pulse and temperature in children, the same type of Yellow Fever as in the adult.

In children, the symptoms of the period of congestion are more accentuated; vomiting, pains, congestion of the face, delirium; but the secondary lesions of the kidneys and the liver are much more rare. Black vomit especially has not the same gravity.

Very virulent Yellow Fever, or that attacking an enfeebled constitution, is evidenced in the child as well as in the adult, by the rapid succession of such symptoms as show the gravity of the disease; temperature reaching 105 deg. or above; albuminuria on the second day; black vomit and icterus on the fourth day; suppression of urine.

The disease is absolutely the same in the child as in the adult, and the two laws of the fall in pulse rate and of the divergence between the pulse and the temperature are just as characteristic.

CHAPTER V.

DIAGNOSIS OF YELLOW FEVER.

To diagnose Yellow Fever means to recognize it every time it exists. To recognize it and to differentiate it after two or three visits from other acute pyrexias, which have some traits in common during the period of invasion only, it is necessary to know thoroughly its symptoms and their succession, to know the day upon which a given symptom ordinarily appears, and especially to have an exact conception of the fall in pulse rate and of 'Faget's law, which are pathognomonic phenomena met with only in typhus icteroides.

By means of the proper grouping of the symptoms of invasion and of the curves of the pulse and the temperature, the diagnosis is more than easy, it actually obtrudes itself within the first thirty-six hours. It is unnecessary to wait for albuminuria, icterus, black vomit, suppression of urine.

Diagnosis of the disease is not sufficient, it is also necessary to diagnose the patient, in order to appreciate the degree of resistance of his organism. It is unnecessary for me to insist upon this point further than to state that, clinically, one is as important as the other. In order to be able to treat the patient it is necessary first to know what he has.

The first two or three observations of the patient most frequently enable the physician to diagnose the disease, especially if the patient is seen at the outset of Yellow Fever, but the diagnosis of the patient must be studied daily, at each visit, and as long as lasts the morbid evolution; for, it is by comparison, by successive conclusions as to the general condition of the patient, and by suggestions furnished through the symptoms that the physician should be inspired in formulating the prognosis and in guiding the treatment.

Since the time that the genius of Pasteur has enlightened us as to the genesis of febrile infectious diseases and demonstrated that each is produced by a specific germ, etiologic diagnosis has assumed a very great importance.

When the Klebs-Löffler bacillus is found in

a culture of false membrane taken from the tonsil, the diagnosis of diphtheria is made: when Koch's bacillus is found in the sputum, the diagnosis of tuberculosis is established; such is the case in many other bacillary diseases.

Dr. Sanarelli, while studying Yellow Fever at Montevideo, isolated and cultivated a microbe which, when inoculated in animals, has produced the symptoms of typhus icteroides and the same anatomical lesions as in man.

Dr. P. E. Archinard, of New Orleans, as well as other bacteriologists, have found Sanarelli's bacillus during the epidemic of 1897 in the organs of many patients having died of Yellow Fever.

The studies and experiments of Sanarelli, repeated in the laboratories of New Orleans, have fully confirmed the result obtained at Montevideo.

Upon reading Sanarelli's reports upon his discovery, one is convinced that his bacillus icteroides is the pathogenic bacillus of Yellow Fever. Still, I would like to see his valuable discovery confirmed and endorsed by the great bacteriologic institutes of Paris and of Berlin.

The sanction of the authorities would give it absolute certainty and is indispensable from the fact that the medical public has already been informed on eleven occasions that the true microbe has been found, only to be disappointed eleven times. I do not believe that this will be the case with Sanarelli's announcement.

By means of more than 100 well conducted experiments, Dr. P. E. Archinard has demonstrated that the serum of blood taken from a Yellow Fever patient agglutinates Sanarelli's bacillus and that this phenomenon of agglutination, generally accepted for the diagnosis of Typhoid Fever through the labors of F. Widal, is produced in Yellow Fever seventy-five times in a hundred.

This is again a precious method of diagnosis which can, at the beginning of an epidemic, aid in recognizing in a rapid and scientific manner the existence of Yellow Fever. Archinard obtained agglutination with blood drawn on the second day of the disease. It would be highly useful to know if the phenomenon can be produced by means of serum on the first day. This is probable, for I was assured by the distinguished bacteriologist that the serum ob-

tained on the second day produced agglutination more rapidly than the serum of the third or fourth day.

The agglutination test would, at the beginning of the epidemic, with the indispensable aid of the clinical observations, enable us to make an early and positive diagnosis; urgent measures might then be taken to try and prevent the establishment of a focus. It would be necessary to isolate the first cases outside of the threatened city and thoroughly to disinfect the apparel, the room, and the house of each patient.

The application of these laboratory discoveries will be very useful during epidemics of Yellow Fever and, in doubtful cases, the culture tube and the phenomenon of agglutination will act as a check on or corroboration of the bedside observation; but the scientific diagnosis can never take the place or even diminish the importance of the clinical diagnosis.

Intensity of the fever, its exacerbations, its remissions, functional troubles, a very acute or benign course of the disease, will always furnish the most indispensable data for the proper treatment of the patient. The laboratory can only furnish the label of the disease whilst a

carefully taken clinical observation will give the therapeutic indications which can aid in curing the diseased organism.

It seems almost impossible to commit an error in diagnosis when Yellow Fever is viewed during its complete evolution from invasion to termination; when all the principal symptoms, which succeed each other nearly always in the same order, are aligned; and, especially, when it is remembered that the yellow typhus is characterized ninety times in a hundred by the fall in pulse rate during the first seventy-two hours and by a divergence between the pulse and the temperature. When an epidemic exists in a city; when the cases showing characteristic symptoms are multiplying in a house, on a street, in a neighborhood; when it is especially non-acclimated people who fall ill, while those who have already had Yellow Fever remain well, doubt no longer exists and no physician can hesitate to say to the family; "This is a case of Yellow Fever."

Hesitation is possible for the first cases only, when they are mild or of moderate intensity, and when no exacerbation of temperature occurs, which is a possibility, but of rare occurrence. It is also very difficult to make a

positive diagnosis when the patient is seen only on the third or fourth day of the disease and when the observation has either been poorly taken or not at all recorded.

In light cases the phenomena of congestion may be accentuated; cephalalgia, rachialgia, vomiting and the facial aspect may exist, but as the pulse and temperature fall in parallel lines, the pathognomonic sign of lack of correlation between the pulse and temperature is missing. There is no albuminuria and no icterus. The fever is one of a single paroxysm and lasts two, three, four and even five days.

In such light cases the clinical diagnosis must be reserved, but the information obtained as to the surroundings of the patient may assist in clearing the situation.

Should one learn that the patient comes from an infected point, or one that may be so; that the patient has never had Yellow Fever; that members of the family or neighbors have been taken suddenly ill, presenting about the same symptoms; that he has arrived by ship from a port infected with Yellow Fever, and that there have been other patients on board, or deaths at sea, these various informations

may be grouped and a positive diagnosis may be reached.

As far as the patient and the physicians are concerned, a positive diagnosis has no great importance in light cases, as recovery is the rule and the treatment is merely hygienic—rest, fresh air, Vichy water in abundance.

Doubtful cases must be treated just as if they presented no doubt as to diagnosis.

For cities like New Orleans, however, where Yellow Fever comes always from importation, an early diagnosis, even in the light cases, is very important on account of the sanitary measures which must be taken, in order to prevent the propagation of the disease if possible.

When severe cases of Yellow Fever are observed at the outset of an epidemic, a doubtful diagnosis is no longer permissible. A fall in the pulse and a divergence between the pulse and temperature, coming after the symptoms of congestion such as cephalalgia, rachialgia, and vomiting, give absolute certainty within the first three days, made doubly sure by albuminuria, icterus and black vomit.

Since the introduction of the thermometer in the study of fevers, observation of the pulse

has fallen into desuetude. The older physicians had greater consideration for the manifestations of the pulse, and I believe they were right. To-day we feel the pulse to see if it is strong or weak, frequent or irregular, but many physicians never count it. It is wrong, and, within the Yellow Fever zone, it is an error.

It is needless to remind the reader that, in New Orleans and in the cities of the United States situated on the coast of the Gulf of Mexico, Yellow Fever occurs only from May to November, from the beginning of the hot season to the first cold spell, and that the month in which are observed the symptoms which might suggest Yellow Fever must be taken into account when making a diagnosis.

It is evident that in December, January, February, March or April, the idea that a patient may have Yellow Fever can nearly always be discarded. I say nearly always, for as Renan has said: "Everything happens, even winning the capital prize in the lottery." Many infectious diseases have an outset similar to that of Yellow Fever—chill, burning fever, congestion, and general aching; but, in

all of them, the pulse remains in correlation with the temperature and, while the fever remains stationary or rises, a fall in the pulse is never observed.

In malarial fevers, with catarrh of the stomach, bilious vomiting, intense chill and high temperature, the pulse is always very rapid, and does not decrease as long as the fever remains elevated. If intermittency occurs, the disease can be decided upon within twelve to eighteen hours. In typhus icteroides the fever never lasts only twelve or twenty-four hours; the lightest cases last at least three days.

In malarial remittent fevers, which last sometimes three and four days and more, there is never a fall in the pulse rate nor a divergence between the pulse and the temperature; also, the congestive pains are not localized in the head and the back, as in Yellow Fever; the pains are more general, and more in the nature of muscular and articular malaise; the face does not take on a glossy appearance; albumin is rarely found in the urine, whilst in Yellow Fever a temperature between 104 and 105 deg., and especially above, should it last at least twelve hours, always produces albuminuria.

The spleen is often enlarged and tender upon pressure in Malaria; there is no such condition in Yellow Fever.

Finally, if a difference in symptoms yet allowed a doubt, the microscopical examination of the blood would show Laveran's hematozoa, the plasmodium, which would settle the difficulty.

Yellow Fever has been mistaken for remittent bilious fever, the hemorrhagic fever of warm climates, but, as has been well said by Dr. Rochefort in his excellent article on Yellow Fever, in the *Dictionnaire Encyclopédique des Sciences Médicales*, "The prolonged chill, the early appearance of dark urine, of intense icterus, and of persistent pains in the hypochondrium; its intermittent or remittent febrile type; its rare and slight hemorrhages, are in marked contrast with the scanty and clear urine, the more tardy icterus and the serious hemorrhages, especially from the stomach, in Yellow Fever."

This form of bilious fever is very rare in New Orleans; I have observed three cases in thirty-three years: the first was in an alcoholic who, with a temperature above 105 deg. and an intense icterus, had blood in the urine

eighteen hours after the outset; the two others were in sailors on a ship from Colon, where the disease constantly exists. In neither of the three cases was there a fall in pulse rate, nor Faget's law. The first patient died on the third day, having a liver enormously enlarged; the two sailors were cured with large doses of sulphate of quinin. While treating these three patients, the idea did not suggest itself that they might have Yellow Fever, so different were the symptoms and especially the evolution, from those of Yellow Typhus.

During the last epidemic which prevailed in New Orleans and in several adjoining States, the question of the diagnosis between Dengue and Yellow Fever was much discussed by physicians. The epidemic was so mild, almost without mortality, and attacked chiefly children, so that it was long before it was officially declared to be Yellow Fever.

I have already spoken of the scientific and the clinical diagnosis; the commercial diagnosis must be added to the list; it is that which denies the existence of Yellow Fever, or calls it by another name in order to avoid quarantine and a cessation of traffic. This diagnosis at times of light epidemics, such as that of

1897, is only one of bad faith ; but, in a serious epidemic, it could cause many victims.

In 1876, I had occasion to study Dengue in New Orleans by means of the thermometer and the watch, and, among the numerous cases treated by me, never did I notice in any symptoms, save those of invasion alone, nor especially in the succession of those symptoms, anything which might lead a well-posted physician, knowing both diseases thoroughly, to take one for the other.

It can not be repeated too often that it is not by means of one symptom but by the collection of symptoms and their succession that a diagnosis should be made.

Guided by the most recent works on Dengue, I shall give a symptomatic description of that disease, showing the fundamental differences existing between it and Yellow Fever.

Dengue is an epidemic, contagious, febrile disease essentially characterized by articular and muscular pains and accompanied by polymorphous eruptions.

Yellow Fever is also epidemic, contagious, and febrile, but the pains characterizing it are especially rachialgia and cephalalgia. It is never accompanied by polymorphous eruption.

The popular names given to the diseases help to differentiate them, Dengue being variously designated as dandy fever, articular rheumatism of warm climates, break-bone fever.

The invasion of Dengue is similar to that of Yellow Fever and is also ushered by a chill. The fever is generally of one paroxysm, reaching its maximum within two hours after the outset. "The pulse always follows the oscillations of the fever," says Dr. de Brun, who has observed and thoroughly studied this disease in the Orient. "It varies between 100 and 130, and in some cases there is a slowing of the pulse, especially during convalescence."

It is only in very mild cases of Yellow Fever that there is only one paroxysm, whose maximum is at the outset. The maximum is more frequently on the second day and the exacerbations and oscillations last five and six days. The pulse is never in correlation with the temperature; on the first three days it is falling. The slowing of the pulse in Yellow Fever occurs on the fourth or fifth day, and especially during convalescence, as occurs in Dengue.

This phenomenon of the slowing of the pulse

in Dengue has impressed certain physicians, although it is produced only at the termination of the disease, while the phenomenon of progressive fall occurs only during the first three days of Yellow Fever.

Many physicians, as I have too often observed, have not an exact idea of the phenomenon of the fall in pulse rate. They believe that fall in rate is synonymous with slowness. This is a positive error.

The fall in pulse rate is a progressive lowering of the pulse. A pulse can fall and still be quite frequent and far from being slow. A low or a slow pulse is a pulse below the normal rate, or below seventy pulsations. A pulse is falling only when at each observation the pulsations are found to have diminished in number.

A pulse of 120 is very frequent; it falls in rate to 110, it is yet very frequent; it again falls to 100, it is still frequent; to 90, it has again fallen, though it is yet frequent. During the interval of these four observations it has fallen by 30 pulsations; there is a marked fall in its rate progressively, uninterruptedly, but it is not a slow pulse, for a pulse of 90 is

yet a pulse 20 to 30 beats above the normal rate, which is about 70 or 60.

This phenomenon of fall in the pulse rate is met with only in Yellow Fever.

A slow pulse is met with in many affections; frequently in basic tubercular meningitis; during convalescence in dengue; in the pneumonia of children, according to Dr. Comby; also in the convalescence of Yellow Fever, as one can see in my charts. I note once a pulse as low even as 38.

The fall in pulse rate is a phenomenon of the first days of Yellow Fever; the slowing of the pulse is a phenomenon of the last days of dengue, particularly of convalescence.

Returning to the symptoms, we find that the acute pains of dengue select particularly the large and small articulations and muscles.

In Yellow Fever the classical pains are cephalalgia, which exists also, it is true, in Dengue; and rachialgia, which is less pronounced in Dengue. In Yellow Fever the pain is never localized in the articulations nor in the muscles, while in Dengue there is very violent myalgia (de Brun).

The exanthem of Dengue is produced twice.

First, the initial rash, which does not always occur, or may pass unperceived; when occurring, it consists of an intense congestion of the face and the body surface, which might be mistaken for the congestion of the face in Yellow Fever if in Dengue this eruption was not almost invariably accompanied by a more or less extensive edema, which may exist without redness. This edema never occurs in Yellow Fever. The second or terminal rash is characterized by being polymorphous, simulating the exanthem of measles, then that of scarlatina or of urticaria. The eruption covers the hands, the feet, and finally reaches the body; it is accompanied by swelling and itching lasting two or three days. Then comes desquamation which is furfuraceous and which may last ten to fifteen days.

No eruption or desquamation ever occurs in Yellow Fever. Prof. Jaccoud has observed several cases of erythema of the scrotum on the first day, in several cases, during an epidemic in Montevideo, I believe. I have often sought in New Orleans this scrotal irritation without ever having found it.

Dengue always gets well. It is a disease which does not cause tears to flow. Such is

not the case, alas, with Yellow Fever, even during the mildest epidemics.

Apart, then, from a similarity of symptoms during the first hours only, the two diseases can be so well differentiated that it is only the absence of a clear knowledge of the symptoms of Yellow Fever and of the evolution of Dengue which could cause hesitation in the clinical diagnosis after twenty-four hours. I put aside the commercial diagnosis, which is still more easily made.

Finally, albuminuria is very rare in Dengue, and icterus and black vomit unknown.

The making of a diagnostic label of Yellow Fever is very easy; what is difficult is the diagnosis of the patient, the true appreciation of the symptoms and of the lesions which so rapidly follow one another during the struggle between the microbe and the organism. I shall consider this in the chapter on prognosis.

CHAPTER VI.

PROGNOSIS OF YELLOW FEVER.

During a Yellow Fever epidemic the prognosis is ruled by what may be termed the genius of the epidemic, for all epidemics of Yellow Fever are not of equal virulence.

There are epidemics in which all persons attacked are seriously ill or die. There are epidemics of medium intensity in which the progress of the disease is limited and the mortality low. Finally, there are mild epidemics in which nearly all patients recover.

These striking differences are due only to the comparative virulence of the *bacillus icteroides* and the comparative attenuation of its toxin.

The Yellow Fever epidemic of 1853 was the most serious and the most fatal which ever visited New Orleans. Owing to the enormous exodus which had taken place, the population of the city was reduced to 45,000 or 50,000, of which 15,000 were negroes, besides the acclimated. The mortality was 7849.

Distinguished physicians who practised during this terrible epidemic asserted that they lost at least five patients in six.

In 1897 we had the mildest and most benign of epidemics. The mortality was 298, yet, according to my statistics, which are not official, although as carefully taken as possible, there were more than 6000 cases of Yellow Fever, hence:

1853—5 deaths to 6 patients, mortality, 85 per cent.

1897—1 death to 200 patients, mortality, $\frac{1}{2}$ per cent.

The organism of patients was the same in 1897 as in 1853. It must be that the bacillus icteroides was excessively virulent in 1853 and its toxin much attenuated in 1897.

I think I have discovered the law governing these differences. It is this remarkable divergence in the mortality which constitutes the genius of the epidemic.

I have seen in New Orleans two great epidemics of Yellow Fever—in 1867 and 1878; two epidemics of medium intensity—in 1870 and 1873, and five mild epidemics.

In 1867 I lost an average of 1 patient in 3.

In 1870 I lost an average of 1 patient in 14.

In 1873 I lost an average of 1 patient in 13.

In 1878 I lost an average of 1 adult in 29 and 1 child in 52.

In 1897 I treated 76 patients—33 adults and adolescents and 43 children under 14, without a single death.

These differences of mortality are due to the virulence of the microbe, or to its attenuation, as it is perfectly clear that, granted that a well conducted treatment is able to diminish the mortality, it certainly can not diminish it to the extent of changing the average of one death in three patients to that of no deaths in seventy-six patients! Yellow Fever is generally thought to be an insatiable ogre, seeking to devour all. What an error! It does not spread at once nor does it become as rapidly epidemic as Influenza, Dengue, Cholera or the Plague. In New Orleans, where it is always due to importation, it invariably takes a long time after the introduction of the first cases to form its foci and to propagate itself. In studying the official documents giving the history of thirty-two epidemics of Yellow Fever which occurred in New Orleans during fifty years, from 1847 to 1897, I think I have discovered two important laws from the standpoint of

the virulence of the disease, from that of its development, and from the standpoint of the measures necessary to prevent the propagation of this terrible scourge. These laws have constantly held good during the last thirty-three epidemics:

First Law.—All the great epidemics, as well as those of medium intensity, which ravaged New Orleans have always begun in May, June or July, and it has taken one, two, or two and a half months of incubation, after the importation of the first case or cases, before the disease became epidemic or claimed many victims.

Second Law.—All epidemics beginning in August or September have been mild, have lacked virulence, and have shown a light mortality.

The first case of Yellow Fever in 1853 was declared on May 22. There were two deaths in May; thirty-one deaths in June; in July the disease became epidemic, one month and a half after the first case; the mortality during the epidemic was 7849.

Epidemic of 1858: 1 death on January 10; 2 deaths in June; 132 deaths in July; the disease became epidemic in August, six months

after the first case; the mortality during 1858 was 4845.

Epidemic of 1867: first death on June 10; 11 deaths in July; 255 deaths in August; the disease became epidemic two months after the first case; the mortality for 1867 was 3107.

Epidemic of 1878: 2 deaths on May 22; not a single death in June; 50 deaths in July; by August Yellow Fever was epidemic, two months and a half after the first case; the mortality for 1878 was 4056.

Epidemic of 1847: mortality, 2359; incubation one month.

Epidemic of 1854: mortality, 2425; incubation one month and a half.

Epidemic of 1855: mortality, 2670; incubation one month and a half.

The epidemics of medium intensity in 1848, 1849, 1850, 1852, 1857, 1870, 1873 took from a month and a half to two months to form their foci.

As far as the second law is concerned, all epidemics, the first cases of which have been imported in August or September, have always been very mild, the following figures show it, no explanation or comment being necessary:

Epidemic of 1866: first case, August 10; total mortality, 185.

Epidemic of 1871: first case, July 30; mortality, 54.

Epidemic of 1875: first case, August 8; total mortality, 61.

Epidemic of 1874: first case, August 19; total mortality, 11.

Epidemic of 1872: first case, August 28; total mortality, 39.

Epidemic of 1897: first case, September 6; total mortality, 298.

In 1897, the first patient died September 6, and came from Ocean Springs. It was not one or two patients who imported the disease as in the anterior epidemics. Yellow Fever of such mild type existed in Ocean Springs that it was long before the physicians diagnosed it. The disease once officially declared, eleven or twelve hundred people who were summering at Ocean Springs and infected surroundings returned at once to New Orleans with their trunks, their belongings, and many during the period of incubation of the disease in order to avoid quarantine. Foci were formed in all parts of the city; the disease spread at first by direct contagion, then by foci in October and November,

owing to a pronounced hot spell, but the virulence of the bacillus icteroides was so feeble, owing to the tardy importation, that the mortality was only one in two hundred.

The history of the last thirty-three epidemics proves that an important part is played by the month in which is made the importation of the first cases, and that the pathogenic bacillus increases in virulence mainly during the three hottest months—June, July and August.

Yellow Fever is certainly contagious, even very contagious under certain circumstances, as, for instance, on a ship or in a small village.

All microbial diseases are more or less contagious. A patient with Yellow Fever may communicate, and often does communicate, the disease to a person nursing him, one living in his room, living in the same house or the adjoining one, as I have seen in many instances, but is Yellow Fever communicable only by direct contagion? The bacillus icteroides is cultivated in swarms in the human body, but is the human body its only field of culture?

The great epidemics which have ravaged New Orleans can not be explained in their development simply by the culture and growth of the microbe in the human body alone.

In 1878, for example, a patient died of Yellow Fever in the month of May—bear well in mind, during the month of May. The corpse was buried in a walled-up tomb; even did the pathogenic microbes continue to multiply after death, they had no means of exit in order to propagate themselves outside or to create an epidemic. During the rest of May and in June, no other point infected by the disease was found; yet, during July and August it broke out and in three months had infected twenty to twenty-five thousand persons and killed 4056.

The history of Yellow Fever in 1878, like that of the other great epidemics which declared themselves only one to two months after the first and always imported cases, seems to prove, by the long incubation of the germs, that the microbes which give rise to the epidemic one or two months after the burial of the first victims do not come from the bodies of the first patients.

Sanarelli has found the bacillus icteroides in the trachea and in the bronchi; Dr. Archinard, in the case of several patients, has found it in the expired air.

Be it by means of the expired air, by the

dejections, by the secretions, by the perspiration, or by the contaminated clothing of the patients, that the pathogenic microbe is planted, it is at any rate outside of the patient.

A culture surely can not grow and prosper in the air, in clothing, on the walls of houses, nor on the floor of a room. It is probably in the muddy streets; in the offensive gutters, wetted by rains* and heated by the burning sun that this pathogenic vegetable growth must find the best surroundings for abundant food in order to multiply and increase its virulence by successive cultures; suspended in the air, deposited in certain foci, where it develops at a given time, it produces an epidemic.

Under such conditions Yellow Fever would not be contagious only through the patient, but also by means of foci; this might explain the pronounced divergence of opinion of the physicians of the last century and the beginning of this, who were divided into two camps, the contagionist and the non-contagionist.

No matter how incontestable and frequent are the instances of direct contagion, a Yellow

* In June, 1853, there were downpours of rain twenty-three days out of thirty.

Fever patient giving the disease to a healthy person living, if I may so express it, in the same air, the instances of persons who have never approached a patient sick with Yellow Fever and who have taken the disease in the street or in an infected place are perhaps still more numerous. How frequently patients fail to communicate the disease to their family or those about them.

At the hospital of the French Society, where over 1000 cases of Yellow Fever have been treated by me, I have never observed one case starting from within. In 1867 I had five male nurses, of whom three were non-acclimated; all remained free from the disease.

Yellow Fever is contagious, but in my humble opinion the contagion is not only directly from the sick to the healthy; during an epidemic, a large number of patients take the disease within foci outside of the human body in which the bacilli have developed, multiplied and acquired virulence.

The same thing is true of Yellow Fever as of typhoid, which may be said to be contagious also, but is propagated especially by drinking contaminated water. The valuable works of Professor Chantemesse have proved and demon-

strated that it is absolutely necessary to prohibit the use of river or well water polluted by Eberth's bacilli in order to arrest an epidemic of typhoid fever.

How many human lives have been saved since the habitat of the pathogenic bacillus of typhoid fever is known!

From a sanitary standpoint, the knowledge of the habitat of the pathogenic bacillus of Yellow Fever and of its field of culture outside of the patient, will prove of the greatest importance.

The bacillus discovered by Sanarelli seems to be the pathogenic microbe of Yellow Fever. It should be planted in ground and subjected to similar conditions of humidity and heat as the mud of streets, in order to know if it grows in that manner. Should there be future epidemics, it must be sought and isolated in the mud of drains, in the dust of the streets and of the air, in order to determine the dens of this terrible enemy.

From the results of these experiments, difficult of execution I admit, may flow the indications most efficient to rid us of the terrible scourge.

Sanarelli has studied the favorable influence of mould on the development of the bacillus

icteroides. "I have seen on several occasions," says he, "gelatin remain sterile after the implantation of the bacillus icteroides at the same time that agar sown simultaneously showed a growth.

"However, if some mould reached it in time and developed its mycelium, there appeared immediately around the latter, in the gelatin, a ring of small punctiform colonies of bacillus icteroides.

"This strange parasitical phenomenon may be the cause of the easy acclimation of Yellow Fever on shipboard where moist heat and the lack of ventilation favor the development of mould, the latter being indirectly favorable to the vitality of the bacillus icteroides."

The most vigilant efforts must be continued in order to prevent the entrance of Yellow Fever, but if it entered notwithstanding, we would still be doing good work if we could prevent it from multiplying and propagating by knowing the law of the development of its bacillus.

The day that we know how and where the germs of Yellow Fever develop outside of the patient, a great advance will have been made in protective sanitation.

The most urgent measures for the prevention of Yellow Fever appear to be the paving of our streets, the establishment of a good system of drainage and sewerage, the cleanliness of our gutters, and the supply to our people of a better water than that now furnished by the Waterworks Company, which is meat as well as drink.

By means of this improvement, New York and Philadelphia have become rid of the Yellow Minotaur. Yet, communication between those cities and countries where Yellow Fever reigns endemically are more frequent to-day than formerly.

Vera Cruz, which was formerly a frightful nest of typhus icteroides, is to-day in sanitary condition, owing to the establishment of sewerage, the supply of pure water to its inhabitants, and the cleanliness of its streets.

A study of the last thirty-three epidemics teaches the positive conviction that the first imported cases do not directly produce epidemics, but carry the seed. It is the icteroid bacilli escaping from the first patient, carried perhaps in his clothing on shipboard, which, once implanted, prosper outside of the body in a favorable culture medium; the latter, I am

aware, is unknown; it might well be the damp mud overheated by the sun, in our unpaved streets and our gutters, which are always choked with moist and decomposing vegetation.

All the very serious epidemics, those having caused disastrous results in New Orleans within fifty years, have commenced by one or two cases of Yellow Fever imported in May or June; only after an intermission of eight to ten weeks has the germ multiplied sufficiently, outside of the human body, to produce the twelve great epidemics during which were infected nearly all persons not immunized by a previous attack.

When Yellow Fever is imported in August or September it does not find the same conditions of moisture, sunshine, hot nights, etc., so favorable to its pathogenic microbes. The latter must find the culture media bad, for it does not become virulent; all epidemics due to tardy importation have been very mild.

I hope the reader will pardon the lengthy details into which I have entered, owing to the importance of the subject just considered.

The two great factors in prognosis are, then :
1. The genius of the epidemic—that is, the

greater or lesser virulence of the germ. 2. The organic resistance of the patient.

As has already been said, age, alcoholism, excesses, bad habits, insufficient food, unsanitary lodging, emotions, fright, excessive work, and the lack of care, influence greatly the course and the termination of the disease.

The younger, the healthier, the stronger the patient, the greater his chances of recovery.

The genius of the epidemic and the constitutional condition of the patient furnish general ideas concerning prognosis, but it must be enlightened in each individual case of Yellow Fever by an appreciation of the symptoms and of the organic functions and lesions presented.

To prognosticate correctly, the physician must at each visit make a minute search and a careful review of all the symptoms, but the valuable symptom, the beacon, the true guide during the first three days of the disease, is the fever, the course and the degree of temperature.

When the fever reaches its maximum at the outset and defervescence is continuously noted at each visit, the disease is mild.

When the fever ranges between 103 and 104.5 deg. even during the first three days, with

remissions of at least a degree in the morning and the exacerbations are less and less pronounced each night, the patient always gets well.

When the fever ranges between 104 and 105 deg., still with remissions of at least a degree, but with exacerbations above the degree of fever of the day previous, the disease is to be considered grave, yet the cases of recovery are more numerous than the fatal ones.

When the fever reaches 105 deg. or above within the first twelve hours, Yellow Fever is nearly always fatal unless heroic treatment immediately produces a defervescence of two or three degrees.

When defervescence is not maintained after the temperature has reached 105 deg. or above, and the fever again rises to the same point, death is almost certain; a temperature above 105 deg. during the first twenty-four hours gives slight hope of recovery in adults.

Copious urine is always of good augury even should it contain five or ten per cent. of albumin. A patient who urinates in abundance nearly always recovers, although there are rare exceptions.

Scanty urine, with twenty or twenty-five per cent. of albumin on the second day, accompanying a fever above 104 deg., indicates great danger.

When the urine forms a complete coagulum on being heated, death is certain.

When anuria lasts twelve hours, death is absolutely certain. I have seen patients recover after having had the most serious symptoms, but I have never seen it occur when anuria existed. Anuria is the death warrant, not subject to appeal.

Icterus indicates gravity in greater or lesser degree, according to the time at which it appears.

Intense icterus on the third day, urine scanty and albuminous, black vomit occurring at the same time, form a group of symptoms announcing death.

Black vomit on the third day is nearly always fatal.

Black vomit on the fourth day, when accompanied by a rapid fall in temperature, is also nearly always fatal.

When, black vomit having occurred, the fever does not fall suddenly, the temperature continuing to range between 101 and 103 deg.,

the situation is very serious, but there is still some hope of recovery.

The later the occurrence of black vomit, on the fifth or sixth day, the greater the chance of recovery, although yet slight. The more abundant and repeated is the black vomit, the more serious the condition.

Black vomit is less grave in children and in young women than in adults, particularly those having reached over forty years of age; the latter always die.

Incoercible vomiting at the outset is a very bad symptom, and uremic vomiting is nearly always followed by death.

Profuse bleeding of the gums, coming before or at the same time as black vomit, indicates an almost desperate state.

Should black vomit occur only on the fourth or fifth day, the gums being sound, the prognosis is less gloomy.

Intestinal hemorrhage is always very dangerous, and the occurrence of evacuations of gangrenous odor is always followed by death.

Women having uterine hemorrhage on the fourth and fifth days with black vomit never recover.

The three principal prognostic indications can be resumed as follows :

1. The degree of the temperature.
2. The urinary secretion, quantity and quality.
3. Hemorrhage, especially from the stomach.

Yellow Fever is a disease of surprises occasionally, though not frequently, leading astray the most vast experience. Patients die whose recovery had been announced, and, *per contra*, some patients given up to die appeal from the decision of the physician.

As a rule, the physician must be very cautious in his prognosis.

In 1867, I was treating some workmen in a boarding house; the proprietor had requested to be advised as soon as I was positive a patient would die, as he desired to take him to the hospital, in order to avoid his dying in the house and impressing the other patients.

One night I pointed out a patient whom I believed to be nearing his end. On the morrow I was surprised to find the patient in bed, seeming much better. I was told that the night before, while having abundant black vomit every few minutes, he had risen in his

delirium and had swallowed at one draught a basin half full of dirty water, in which all the healthy workmen had washed their hands. The patient had vomited a part of this disgusting, soapy water and also had been purged to excess, but the black vomit had been arrested and, three days later, the resuscitated one entered into convalescence.

Another patient had been placed in a carriage to be taken to the hospital to die. Passing a barroom, his landlord conceived the idea of offering the moribund a last glass of whiskey, of which drink he had been very fond in health. The bottle was brought out to the patient, who half emptied it. This enormous dose of alcohol arrested the black vomit, boosted up the man, who recovered, to my great surprise.

These two instances are mentioned, not in order to encourage resort to extraordinary treatment, but to prove that the most desperate cases sometimes can recover, and to encourage the physician in struggling for the life of his patient up to the time of death itself.

A patient must never be given up!

CHAPTER VII.

TREATMENT OF YELLOW FEVER.

There is as yet for the cure of Yellow Fever no sovereign or specific remedy as we have for Malaria, in quinin; for Syphilis, in mercury and iodide of potassium; for Acute Articular Rheumatism, in salicylate of soda; for Diphtheria, in antitoxin.

However, we are well armed and prepared to aid the organism in its struggle against the icteroid toxin, to attenuate its effects, to retard or prevent cellular lesions, to dilute and especially to eliminate the poison.

All the means we possess to secure the cure of the patient, or at least to try and bring it about, constitute the medication of Yellow Fever.

It is the medication of Yellow Fever such as I understand and practice it that I shall expose in this chapter. I shall go into details which may appear minute, but I believe them

to be very useful as, when treating a patient attacked by any disease whatsoever, it is good to remember a saying of my preceptor Trousseau : " To cure, there are no small measures." Guy Patin, full of malice and humor, relates that during childhood Louis XIV had measles and it required six or eight venesections to save from the clutches of death the one who was to be the *Grand Roi*.

Upon reading accounts of the treatment of Yellow Fever during the last century and in this, almost up to our day, it is seen that the measures employed in the treatment of this terrible disease were repeated purgatives, successive emetics, copious bleeding, wet cupping, blisters, powdered cinchona in massive doses, and, later, sulphate of quinin in large proportions.

Long ago, all active medication, particularly venesection, was laid aside in the treatment of eruptive fevers, and rest, aeration of the sick room, the administration of warm drinks in abundance and of liquid food, such as milk and thin broth, now constitute the therapeusis of these infectious diseases.

It has taken centuries for the cry of distress of the organism to be heard ! " The Lord save

me from my friends, I can take care of my enemies ! ”

Since Pasteur has taught us the pathogeny of infectious diseases, and since we have learned that no remedy has a direct and salutary effect on any microbe known to us or its toxin, we load and irritate the stomach less and less with remedies. “ Drugs are dying out.” The treatment of Yellow Fever, just as that of the eruptive fevers and of Typhoid Fever, as well as all infectious diseases, tends to rid itself from day to day of remedies that are nearly always useless when they are not harmful.

Professor Bouchard has furnished to physicians the most important therapeutic indication in the efficient treatment of infectious pyrexias by his studies on the toxic properties of urine in infectious diseases, on the renal elimination of toxins, and on organic filtration by the urine.

The sovereign remedy in Yellow Fever will be the antitoxin whose discovery is announced by Sanarelli. As soon as it is at our disposal, we shall certainly be relieved of the enormous mortality of Typhus Icteroides in time of epidemics especially if, as is the case with Roux' serum, it is both immunizing and curative.

While awaiting a practical realization of the

great discovery, we are not entirely powerless, and can, by means of a well-conducted method of medication, meet the two principal indications of treatment in Yellow Fever, as follows :

1. To strengthen and sustain the organism by fortifying the nervous system, by arresting congestion, and by increasing blood pressure and diuresis.

2. To consume, destroy and eliminate the toxin.

The first indication is fulfilled by means of cold sponging, by cold baths administered, not in a systematic or routine way, but by taking the virulence of the disease and the degree of fever as guides.

The second indication is met by putting the patient in a well aerated room night and day, and by making him drink, in order to cleanse his blood, dilute the toxins, and eliminate them by way of the urine, two, three or four quarts of Vichy water (Célestins) in twenty-four hours.

The treatment of Yellow Fever is very difficult from the fact that the disease, like Cholera and the Plague, frequently has a very acute and very rapid course, and that in very virulent cases the physician has really only a few hours in which to act with efficacy.

At the outset of the infection the patient can be succored, but what can be done when the organism is poisoned, when the toxin has already affected the hepatic cells and the renal parenchyma, and when the mucous membranes are bleeding? The physician is practically disarmed, for such lesions are nearly always fatal.

It is during the first three days of the disease that the physician must act. When black vomit has come to darken the situation, we can yet save some patients, but we are much better prepared to prevent the occurrence of black vomit than to cure it.

The first and the most indispensable thing for success in the treatment of Yellow Fever is that it be begun as soon as the disease has declared itself.

When confronting a patient attacked by Yellow Fever, what must be done?

MEDICATION OF YELLOW FEVER.

1. ABSOLUTE REST OF THE PATIENT.—The first thing is to put the patient to bed. Rest is essential and indispensable. The patient must not be allowed to rise either during the period

of congestion, during the course of the disease, or during convalescence. Great strictness and severity are necessary on this point. I allow a patient to rise only after the fever has ceased since several days, after he has begun to nourish and to recuperate his strength, but never before the pulse, slowed by convalescence, has become of normal frequency for at least two days.

Walking, moving, the least muscular effort, always increase the fever and consequently the gravity of the disease. How many times have I observed the truth of this statement!

An increase of a quarter or a half degree has no great importance when the temperature ranges between 102 and 103 deg.; but when the temperature is between 104 and 105 deg., a rise of half a degree, provoked by imprudent movements, may be very serious and lead to the patient's death. I can not count the number of patients whom I have seen die, in this manner, by their own fault. It is even necessary for complete security that patients should make no muscular efforts, and that the nurses should turn them, change their position, put them on the bedpan, etc. Rest must be absolute both during the disease and the convalescence.

In 1897, two physicians died of Yellow Fever; both had at the outset such a light attack that they continued to make their professional calls. As usual, the disease from mild became serious on this account, and both paid with their lives for their courageous imprudence.

Relapses, which are always much more virulent than the primary attack, most frequently occur because the patient gets up or eats too soon.

2. AERATION OF THE ROOM.—'The patient must be placed in the largest and best ventilated room in the house, exposed to the rising sun, if possible. The Spanish proverb can be quoted in reference to Yellow Fever: "Where air and sunlight enter not, death enters."

Open the windows wide, night and day. Do not place the patient in a draft, but let the outside air enter, circulate freely, and be renewed constantly.

In Yellow Fever, as in all infectious diseases, pure air is absolutely necessary, indispensable, the best remedy, one without which we can not do. The inspiration of pure air by the patient twenty-five or thirty times a minute cools his

blood, charges his corpuscles with a normal quantity of oxygen; this thorough oxygenation of the blood hastens the phenomena of nutrition, and especially the oxidation of the toxin. Pure air is the best auxiliary of the cells in aiding them to get rid of the icteroid virus. This is so true that in all epidemics the mortality is excessive among badly lodged patients living in wretched holes where the air is unrespirable.

Emigrants and new arrivals, even when young, strong, well-built and temperate, are decimated because their lodgings are poor, unsanitary, bad smelling and overcrowded.

The Italians who, together with the drunkards, furnished nearly the total mortality of the last epidemic, died not because they were Italian, but because they were ill in miserable quarters, of which one can scarcely have an idea, and lacked all care.

Such Augean stables must be made to disappear in cities liable to visits from Yellow Jack, and the question of unsanitary lodgings must be one of the first to receive the attention of a Board of Health knowing its business and duty. Upon the first appearance of Yellow Fever, they should cause without

delay the evacuation of all these centres of pestilence and death.

In 1867, two confrères and I treated a number of Italians in a large hovel, whose rooms were ill-ventilated, and in which were crowded men, animals, and decomposing fruit. Of thirty-seven patients, thirty-six died.

Unfortunately, popular prejudice is against the aeration of the sick room, especially at night, the physician often being asked if the dew is not to be dreaded. Be firm in combating with conviction, with eloquence and all your authority, a prejudice which makes too many victims.

During each epidemic I have seen many children killed by ignorant mothers, who insisted upon keeping them in tightly closed rooms in which the air was never renewed and five or six persons were consuming what little oxygen there was !

Tell the parents to open wide the windows and doors and to allow the windows to remain open night and day. Air, air, always air !

Too often, the physician once gone, the windows are closed and the patient once more becomes deprived of pure air, much to his detriment.

3. CLINICAL OBSERVATIONS.—Once the patient is placed at absolute rest in a well aerated room, I take the following clinical notes: The exact hour of the outset of the disease; the condition of the stomach, of the intestines, and of the mind; I then count the pulse, take the temperature and mark the results on a clinical chart.

4. RECOMMENDATIONS TO THE NURSE.—The patient must be kept very clean; should he be soiled by evacuations, vomiting, or epistaxis, change the linen and plunge the soiled objects at once into a large tub containing an antiseptic, preferably bichloride of mercury, one gramme to a bucketful of water. Cleanse the patient's mouth and teeth twice a day with warm water and a tooth brush sprinkled with powdered bicarbonate of soda. Administer every morning and night, by enema, a pint of warm water containing a tablespoonful of sulphate of soda or magnesia. The cleansing of the mouth and the bowel must be done daily during the entire duration of the disease, unless countermanded.

A well cleansed mouth is a comfort to the patient, often prevents the swelling and bleeding of the gums, and diminishes the

danger of secondary infections leading to the production of parotiditis.

The regular administration of enemata keeps the bowels free and also diminishes the chances of secondary intoxication by way of the intestine. The patient always feels better after evacuating an enema.

5. THE URINE—My last recommendation is that the urine voided in twenty-four hours be put aside, in one vessel as far as possible.

At each visit I have the vessel brought to me and can judge, by that means, of the proper or improper functioning of the kidneys.

The execution of these recommendations must be watched during the entire course of the disease. Once they are well understood and appreciated the treatment can be begun.

TREATMENT OF THE PERIOD OF CONGESTION AND DURING THE COURSE OF THE DISEASE.

CALOMEL.—I give, according to age, two or three grains of calomel, two grains to adolescents, three grains to adults; to children I give even only one grain.

I give it more as an intestinal antiseptic

than as a purgative, and administer it in such small doses in order not to overpurge the patient and especially not to irritate the stomach or the bowels.

Rarely do I repeat the calomel unless there be pressing indications, as the large enemata, administered night and morning, keep the bowels in good condition without producing any irritation of the digestive tract. If the calomel is vomited, however, it would be better to repeat the dose once the stomach becomes at rest.

FOOT BATH A LA CRÉOLE.—In New Orleans, when the physician makes his first visit he finds that the patient has already been given a Creole foot bath. If it has not been done, you must order one, and if it is not known how to give it, here is how you must proceed: half fill a foot-tub with rather warm water, adding a pound of freshly ground mustard which must first be dissolved in sufficient cold water; place the foot-tub in the bed; the patient's feet and legs, the latter being flexed while the patient remains on his back, are then plunged in the water.

The patient and the tub both are covered with two or three woolen blankets and, the lat-

ter being lifted, a pint or two of very hot and almost boiling water are added to the bath every three or four minutes.

The bath must be very hot; while it must not burn the feet, it is necessary that the heat and the mustard produce a powerful revulsive effect, which the patient must bear until the pain becomes too severe.

The patient is given a vapor bath under the cover; it causes him to sweat freely, his face and entire body being covered with perspiration; during eight or ten minutes this sudorific effect must be kept up by continuing to add hot water to the bath and by the drinking of hot aromatic infusions.

Properly given, the foot bath produces profuse diaphoresis; a marked and favorable relaxation occurs and the phenomena of congestion are controlled. Cephalalgia and rachialgia seem to disappear. I had occasion to appreciate the good effect of the foot bath and, since 1866, I have always ordered it at the outset of the disease, and have always had occasion to congratulate myself upon the result.

Should the physician deem it necessary, the patient being very plethoric and the phenomena of congestion much accentuated, the

foot bath can be renewed two or three times during the first twenty-four hours of Yellow Fever.

When the revulsion has become painful and unbearable, a profuse sweating having been obtained, the foot-tub is to be withdrawn and the patient allowed to perspire about fifteen minutes or more, still covered with the two or three blankets.

The patient must then be quickly and thoroughly dried. The moist sheets and blankets must be removed, and a light woolen blanket must be slipped under the patient and wrapped around him. He is to be left, during the first three days, without night-shirt or any clothing whatever, in order that he may not be fatigued by being dressed and undressed when he is sponged.

COLD SPONGING.—After this, I give in person a cold sponging to the patient. I act as nurse in this wise in order that the patient may have the best chance for proper treatment; for, if you do not teach these things yourself, you are only half understood and your orders are imperfectly executed. A badly applied sponging does no good and gives no result. Many times have I seen patients remain in the same

state or get worse because the persons nursing them did not get my orders straight.

Always watch your patient, but watch also the nurse.* This is the advice of an old clinician. In a disease like Yellow Fever the active treatment of which is so short, every detail must be carefully worked out.

To give a good sponging it is necessary to use a large bucket containing four or five gallons of cold water. This bucket is to be placed on a stool or chair near the patient's bedside. Do not use a sponge, but take a large, soft towel, a little the worse for wear; dip it completely in the water; wring it slightly, in order that the water may not drip from it, and, uncovering the patient, sponge him by rubbing gently the chest, the abdomen, the thighs, the legs and the feet, wetting the towel with cold water from time to time; continue the sponging until the little operation has been repeated ten or fifteen times if necessary. The most important point is not to cease sponging before the wet towel is no longer heated by the patient, before it no longer abstracts heat, or before the patient's

*This does not apply to trained nurses; but, unfortunately every one can not have a trained nurse during an epidemic.

skin is to the touch of the same temperature as the cold water.

The patient must then be quickly wiped with a dry towel and turned on his stomach, in order that the sponging, with the same care, be applied to the posterior part of the thorax, to the back, the nates, and the lower limbs. Having dried these parts in turn, the upper extremities must also be sponged, after which the face and head must be sponged in turn with ice water. All this terminated, the patient is to be wrapped in his light woolen blanket.

It can not be imagined how much comfort and ease are produced by this careful sponging. By this means my temperature was moderated when I had Yellow Fever in 1866. To this I owe my recovery, and, since that time, I have always sponged my patients.

After a well applied and thorough sponging, the temperature falls one or two degrees. The painful phenomena due to congestion of the head, the stomach and back, disappear as if by magic. The patient thinks himself cured. Unhappily, the surprisingly beneficial effects are not of long duration, and the process must be repeated and continued. I follow this rule:

guided entirely by the degree of fever, if the patient's temperature does not reach above 103 deg. I have him sponged every two hours; should the fever range between 103 and 104 deg., I have the sponging done every hour; if the fever ranges between 104 and 105 deg., I order spongings every half hour. I have the temperature taken before and after each sponging, as I attach great importance to the amount of remission produced. If the remission is of one degree or more, I consider the result favorable; if it is less than a degree, I act more vigorously. To act more vigorously is to use colder water for the sponging.

Ordinarily I have the water used at its natural temperature, that is just as it leaves the cistern or hydrant. At the time of the year at which Yellow Fever exists, in summer in the United States, the temperature of the water varies between 75 and 85 deg. If at such temperature the sponging does not produce a remission of at least one degree, I add from four to six pounds of ice to the water. The colder the water, of course, the more heat it abstracts, the faster it causes contraction of the capillaries, the more it strengthens the vaso-

motor system, and the more rapidly it lowers the fever.

In Yellow Fever, the more elevated the temperature the more dangerous the case, and especially the more danger it indicates, consequently, the more active must the treatment be. I then cool the water in order to increase the difference between the temperature of the patient and that of the bath. A rapid remission must be produced at any price and water at 60 deg. lowers the temperature, contracts the capillaries, and stimulates the nervous system much more rapidly than water at 85 deg., while it also increases diuresis to a greater degree. The higher the fever, the colder must the application be; success depends upon it.

The first contact of the cold water on the burning body causes more of a surprise than a suffering; it lasts only a few seconds and the patients derive so much comfort from the sponging that they are the first to ask for its repetition when the fever rises again.

A few patients, particularly very nervous women, do not bear this sudden impression of cold and are excited thereby. Do not insist, but begin the sponging with tepid water and

cool slowly, continuing the sponging for a longer time.

In small children I prefer baths in water neither warm nor cold, that from which the chill has been taken, as the expression is—say about 85 deg., if the rectal temperature is not above 104.5 deg.; but if the rectal temperature is above 105 deg., I order baths cooled to 75 deg.; children bear these baths admirably and derive a pronounced benefit from them. The fever is lowered two or sometimes three degrees. The nervous excitability which is so constant in children with Yellow Fever is completely controlled by the baths. The sedation is remarkable, and the child once dried and put back to bed falls into a calm and peaceful sleep.

I repeat these baths every hour, if the temperature is above 104 deg.; every two hours, if it is only about 103 deg., and once the fever is decreasing, I have them given every six to eight hours until the temperature becomes normal.

COLD BATHS.—When, in the adult, the fever reaches 105 deg. or above, I immediately put the patient in a cold bath, taking his temperature in the mouth every five minutes. If the temperature is lowering regularly, I let him

remain twenty to thirty minutes in the bath, or until I have obtained a remission of at least two degrees; if the remission is produced too slowly, I add twenty to fifty pounds of ice to the bath. The physician must act with confidence, without dread of injuring the patient, for all fear is delusive, and this is the sole, though heroic, way of attaining recovery.

The cold bath treatment will not save all patients whose temperature is above 105 deg., for there are cases of Yellow Fever so virulent that they can not be snatched from death; but, if one-half can be saved, a result will have been reached which no other medication can yield. Should there be no bath tub on hand, the patient must then be sponged with ice water by two or three persons until the temperature has been brought down to 103 deg. at least. The cold bath is certainly preferable when the temperature is above 104 deg.; refrigeration is more complete, and is made over the entire surface of the body simultaneously; by means of ice the water can be kept at the temperature desired and lowered whenever judged necessary. Unfortunately, Yellow Fever in the ports to which it is carried is a disease attacking poor folks. Rich people, when non-

acclimated, go to the mountains and are not wrong. The poor devils have no bath tubs at their disposal, but can always furnish a bucket and cold water.

Sponging must be resorted to night and day during the entire period of congestion, three days at least, and longer, if the fever assumes a remittent type which often lasts five and six days. The baths must be repeated also, if the fever rises above 105 deg., the sponging being sufficient if the temperature is lower.

I need not expose at greater length the advantages of hydro-therapeutic medication, as it is to-day the reigning treatment of nearly all infectious diseases. It is resorted to in Typhoid Fever; in the eruptive fevers, including scarlatina; in acute articular rheumatism of cerebral character; in the infectious algid period of cholera infantum, in which cases the rectal temperature frequently reaches above 106 deg.; in fibrinous-pneumonia, broncho-pneumonia, or grippal-pneumonia; in a word, in all the infectious pyrexias in which virulence is denoted by a very high fever.

Results have proved the advantages of this medication. Brand's method has reduced the mortality of Typhoid Fever to 7 per cent. and

in the Bavarian army to 1 per cent. Louis used to call Typhoid Fever the opprobrium of medicine, owing to its mortality, which, forty years ago, used to be over 60 per cent. In pneumonia the mortality has been reduced to 13 per cent., while it is 29 per cent. when treated by ordinary methods. In Yellow Fever, the best results are always obtained, as I shall not tire of repeating, when the sponging is done at the outset of the disease. Upon that is conditional its influence toward a favorable final result. When sponging is begun only on the second, or especially on the third day, half of the beneficial effect is lost, the results not being comparable to those obtained when it is resorted to from the first day of the disease.

This medication meets all the indications in Yellow Fever; it lowers the temperature one or two degrees; it acts favorably on the heart, its beats becoming stronger; it contracts the capillaries, diminishing congestion; it quiets the nervous system; it acts with energy on the vaso-motor nerves; it increases blood pressure; favors diuresis to a great extent; increases the action of the skin and produces its antisepsis.

Billings has shown that a cold bath increases

the number of leucocytes considerably, and that, after a bath at 75 deg. of twenty minutes' duration, the white corpuscles in blood taken from the lobe of the ear increase from 7724 to 13,170. I have a large experience with cold sponging in Yellow Fever, for I have practised them since 1866 and have treated more than two thousand cases, having been my own client at first. To them I certainly owe my best successes and some unlooked-for cures.

A properly made sponging lowers the fever, diminishes congestion, increases blood pressure, and causes abundant urination. The constant and most wonderful result, however, is that the patient is always relieved beyond expression by the sedative and calming action on the nervous system. High fever above 104 deg. puts the patient in a state of general excitability, a mental and muscular delirium, which nothing appeases like the cold sponging or the cold bath. Cold is the most pronounced sedative against pain and nervous excitability. We know it since the time of Hippocrates, but we forget it too often when trying to relieve the patient.

The patients who recover are those whose fever remits in a marked manner, and who

urinate abundantly. Since cold baths are used in Typhoid Fever, nephritic complications are very rare; long ago I noticed that albumin was often absent and not very pronounced in very serious cases, when patients were properly sponged.

The good results of sponging are momentary, Yellow Fever being a cyclic disease which can not be arrested or jugulated. Spongings only moderate the fever and attenuate the symptoms, it is true, and in an hour or two one must begin over again, yet the same result is again obtained after each sponging. Which medication can accomplish as much? I have tried everything, and have finally remained faithful to this form of treatment.

Exaggeration, as well as a systematic medication for all cases, must be avoided. Each patient has Yellow Fever in an individual fashion and the treatment must vary according to the virulence of the disease.

Light cases pursue their course toward recovery without sponging, without bath.

Cases in which the fever ranges between 103 and 104 deg. are made very comfortable by sponging, which prevents the occurrence of complications, but recovery is possible without

its use. However, when the fever runs between 104 and 105 deg. they are indispensable, while above 105 deg. they, together with the cold bath, give us the only medication which can sometimes obtain recovery.

This sponging or refrigeration in Yellow Fever, as in fact all medication, is a question of medical tact, with the advantage that it can never do harm ; badly done, it may not give good results, but it will not hurt, while, when well applied, it certainly saves many patients who would otherwise die. I believe that, without exaggerating, the mortality may in this wise be diminished by thirty per cent.

TREATMENT OF VOMITING.—Vomiting is a very painful and fatiguing symptom at the outset of Yellow Fever. The icteroid toxin has, according to Sanarelli, a very active emetic effect.

After the invasion, the stomach ordinarily contracts and expels whatever it may contain. Being congested and very tender upon pressure, it is exceedingly irritable. Whatever the patient takes is vomited, whether it be remedies, food, or drink. Hence the indication is to allow the stomach the most complete and absolute rest.

When consulted by a carpenter with a phlegmon of the hand, is he advised to continue hammering with the ailing hand? He is ordered to place his hand at rest, in a sling, and probably to poultice it. Why then attempt to compel a congested, painful and ailing stomach to continue working; why irritate it, why make it try to digest or absorb? By vomiting everything that is put in it, the stomach squarely says: "For goodness' sake let me alone."

While this period of intolerance lasts, which is usually a very short time, give the stomach the most complete rest.

DIET—NOURISHMENT. — During the first seventy-two hours of Yellow Fever I give no nourishment whatever, not even milk or broth. Should the fever fall below 102 deg. previous to the third day, I then allow some milk, diluted with Vichy water, every four hours.

Graves, Dublin's great clinician, said one day to his pupils that if they were ever embarrassed as to a choice of epitaph for him, to inscribe on his tomb: "He fed fevers." If that eminent physician had ever treated Yellow Fever, he would have made an exception, for the lightest nourishment during the period of

congestion increases the fever and aggravates the disease, especially when the temperature goes beyond 103 deg.

Imprudence in alimentation during the first three days has more serious consequences than imprudences in movement. It is disastrous to give solid food, but even milk or light broth cause indigestion and a return of gastric irritability. Starve your patient, whether he be child, adolescent or adult, and do not violate this rule except if the fever be below 102 deg.; one never dies of starvation in Yellow Fever for being deprived of food two and a half or three days, but death is often produced by recrudescence of the disease due to dietary imprudence.

DRINK—VICHY.—During the first three days of the disease allow the patient only Vichy water—Célestins.

Thirty-two years ago I was called in consultation to see a young woman who was dying of Yellow Fever, and was under the treatment of a physician without much medical instruction, but who passed in New Orleans as a great curer of Yellow Fever. I had at that time no experience in Yellow Fever, and never lost an occasion of deriving instruction by

causing such physicians as had seen and treated much of this fever to talk on the subject. I asked my *confrère* to give the benefit of his experience, as say the Americans.

"My experience is very simple," said he. "I first ask if the patient is urinating freely. If I am answered yes, I announce that the patient will recover. If I am told that he urinates very little or not at all, I shrug my shoulders, which means that the patient is lost."

This queer fashion of making the prognosis impressed me. I was not long in finding that this original observation was partly truthful, and, following the succession of that idea coming from the empiric, I understood that if those recovered from Yellow Fever who urinated freely, the indication was to cause patients to drink freely, in order that they might have abundant urine. Remember that this was in 1866. Since that time, finding that the plan worked well, I have always allowed a great deal of cool and even iced water to my patients, the tolerance of the stomach permitting.

It was during the epidemic of 1878 that I noticed that Vichy water had a favorable

action on the stomach, that it quieted vomiting, and that it was imbibed in large quantity without proving heavy, and was well absorbed. Children especially drink it with avidity and pleasure in large quantities without inconvenience.

I first noticed the happy effect of Vichy in the case of a nervous young woman - who was much fatigued by incoercible vomiting. Nothing seeming to quiet the gastric contractions, I ordered Vichy water with crushed ice. Much relieved, the patient exclaimed: "This water is a Godsend to the stomach!" From that time I gave my patients only Vichy and from one to two bottles in twenty-fours.

When Bouchard published his work on the toxicity of urine, I understood why patients who urinate recover from Yellow Fever and why copious drinks are so salutary ; until then I had done like the individual who had been composing prose without knowing it. It is because the icteroid toxin is thoroughly diluted by the abundant quantity of drink, because the blood and tissues are cleansed, and because the poison is eliminated by the urine.

Thirst is always great in Yellow Fever ; the patient is constantly asking for water. Usually

water is to be given only in moderation if the stomach is irritable. Here is the rule I follow: I prescribe at the outset of the treatment a quarter of a glass of Vichy every ten minutes, leaving the patient free to take it according to his taste either iced, cool, or at the temperature of the air.

If the spasmodic contractions of the stomach are not very pronounced, Vichy arrests them and the vomiting in a surprising manner, especially if it be iced.

If the stomach is very irritable and the patient vomits the Vichy even in small doses, I leave the organ absolutely at rest during one or two hours; then the iced Vichy is to be tried again and is to be given to the patient *ad libitum*, on condition that it does not produce vomiting and is absorbed.

Should vomiting continue after the second trial, as may occur in alcoholics and some nervous persons, I discontinue all drinks by way of the stomach and have an injection of two large glasses of Vichy given every three hours, and often more frequently; it must be given slowly in order not to irritate the intestines; the patient must be made to

drink in this way, by the bowel, until the contractions of the stomach are quieted.

It is very rare that Vichy is not borne from the start and, especially, that it is not taken with pleasure by the patient. All do not drink three or four quarts in twenty-four hours, but we must insist upon two quarts, and have them absorbed either by the stomach or by the intestine.

Patients with high temperature have great thirst and much appetite for iced Vichy. Dispense it freely, for it is in cases of high fever that the lavage of the stomach and tissues and an abundance of urine are indispensable for obtaining a cure. Under the influence of repeated cold spongings and of large quantities of Vichy water, diuresis becomes active. The patient urinates at least every two hours, and the quantity of urine voided in twenty-four hours often reaches to two or three quarts or more.

The more abundant the urine the less danger in Yellow Fever, the fever falls, the general condition improves and the congestive pains disappear.

The more copious the urine the less albuminous it is; icterus appears later, even in

serious cases, and I once treated a patient whose temperature daily had been above 105 deg., and was saved through an abundant secretion of urine due to the daily consumption of four quarts of Vichy. Notwithstanding the virulence of the toxin, evidenced by fever above 105 deg. during three days, the patient did not have albuminuria at any time.

I consider Vichy water not only as an agreeable, useful, and indispensable drink in Yellow Fever, but as a remedy of the highest order. The quieting of the stomach is due to the bicarbonate of soda which this water contains. All the secretions are very acid in Yellow Fever, especially the secretions of the stomach and the kidneys. This explains the happy effects of alkaline drinks when given in abundance. (I have looked in vain in the memoirs of Sanarelli for a statement as to the reaction of his cultures or as to the acidity or alkalinity of the icteroid toxin.)

We know that bicarbonate of soda increases the alkalinity of the blood, acts as an antiphlogistic, and that an excess of it in the blood modifies hepatic function and brings it back to the normal. We know also that waters containing bicarbonate of soda stimulate the secreting

organs, increasing diuresis and hepatic circulation.

Finally, we know that alkaline drinks are indicated in acid conditions as gout, rheumatism, some forms of dyspepsia, and that they are very useful in such affections as are due to an excess of uric, lactic, or hydrochloric acid in the blood or the tissues. May not Yellow Fever be an acid disease, I might timidly ask?

At any rate, the first lesion in Yellow Fever is fatty degeneration of the hepatic cell, the second being fatty degeneration of the renal parenchyma; hence, it may be that Vichy water produces such remarkable results in the treatment of Yellow Typhus by stimulating the hepatic circulation and urinary secretion; by diluting, perhaps even neutralizing, the icteroid toxin.

It must be well understood that, in default of Vichy water, the patient must not be deprived of the benefit of carbonated alkaline waters. That from the Célestins spring seems to be the Vichy preferred by patients. Lacking the Célestins, that from other springs can be given or water alkalinized by means of one drachm of bicarbonate of soda to the quart.

Very good results can be obtained with this

artificial alkaline water, but, according to my experience, the patient drinks more freely and tires less quickly of the natural Vichy water.

When the surgeon is about to perform an operation for the first time, he never complains of lengthy operative details to be found in his books; I hope that the physician wishing to treat Yellow Fever according to the indications I have given will not find that their exposition has been too long or too minute as far as the period of congestion and the course of the disease are concerned.

WHAT NOT TO DO.—I have indicated what should be done in the treatment of a patient attacked by Yellow Fever, and would now like to say a word about what must not be done. It is good therapeutics to observe above all the old adage: "*Primo non nocere!*"

I no longer administer remedies in Yellow Fever, as, long ago I acquired the certainty that all drugs in this disease were useless or harmful.

Sulphate of quinin was formerly administered; I administered it in 1866 and 1867; some physicians still give it to-day, influenced by the belief that this disease might be of malarial origin or belong to that family. The

discovery of the bacillus by Sanarelli has enlightened us on that point. Quinin is borne by the stomach only when not much congested; that is to say, in the light cases. When the fever is high and the vomiting persistent, quinin simply keeps up and increases gastric irritation, leading the way to black vomit. Its action is null on the fever, and more so on the infection. In children, whose stomach is very sensitive in Yellow Fever, quinin is never tolerated, and, should it be insisted upon, the situation is likely to be made worse.

In 1878, the physicians who yet believed in the malarial etiology of Yellow Fever lost nearly all the children they treated, because they stuffed their patients with quinin.

Repeated purgatives irritate the intestines and, by their excessive effect, too often weaken the patient considerably. A light purgative may be given with advantage at the outset. I prefer calomel and, later, enemata morning and night during the entire course of the disease.

Preparations of digitalis, infusion of the leaves especially, have been frequently used by me; they have a tonic action on the heart, causing the fever to fall, but, at the end of

twenty-four hours, they irritate the stomach and have no favorable action on the course of the disease. I no longer give them.

It is tempting to resort to the administration of the coal tar products: antipyrin, phenacetin, antifebrin, etc. These remedies meet two indications—they are good analgesics and antithermics. In Yellow Fever they relieve the cephalalgia and rachialgia, and lower the temperature, but, unfortunately, their action is not limited to these two favorable effects. In large doses they decrease blood pressure, depress the nervous system considerably, and diminish the permeability of the kidneys and their depurative action, which is so precious and indispensable in the toxi-infections like Yellow Fever. All distinguished clinicians and therapists who have written about these remedies have discarded them long ago, owing to the mishaps which they might bring about. In Yellow Fever the indications are to increase blood pressure, to sustain the nervous system, and to stimulate the urinary function—just the opposite of the effects produced by these dangerous agents. However, I have several times given a ten-grain dose of antipyrin in order to increase the defervescence produced by spong-

ing or bathing, when the patient was urinating abundantly and the temperature was above 105 deg. But I never repeat the dose.

Ice bags may be used without harm to the patient to relieve severe cephalalgia, epigastric pains, and frequent or incoercible vomiting; they always produce a rapid sedative effect. For the rachialgia, I have the painful region lightly rubbed with a large piece of ice wrapped in flannel.

These pains never constitute grave or dangerous symptoms. They diminish or disappear in twelve to twenty-four hours by means of the sponging.

I need not say that hypodermic injections of morphin, or the administration by the stomach or bowel of any preparation of opium must never be resorted to for the relief of the pains of vomiting of the outset, or especially for black vomit. Opium is a violent poison in Yellow Fever, diminishing the urinary secretion during the period of congestion and totally arresting it during the period of infection.

I object in the same manner to blisters. Cantharides and opium both seal up the kidneys.

Cocain is also a bad remedy, as it depresses the nervous system to a great extent.

TREATMENT DURING PERIOD OF INFECTION.

Sanarelli appears to have accumulated conclusive proofs, in his memoirs, of the discovery of the pathogenic bacillus of Yellow Fever. His anatomo-pathologic studies in man and in animals are so complete and well exposed that it is seen by reading them why we are disarmed as to the treatment after organic lesions have supervened.

His valuable clinical studies confirm what has been taught clinically, that we can aid in the patient's recovery only during the first three days of Yellow Fever.

Once introduced into the organism, the bacillus icteroides produces a general intoxication which we can combat at the outset by proper treatment, thus preventing specific organic alterations. However, if the bacillus is too virulent, if the organism does not defend itself properly, or if the treatment does not secure the elimination of the toxin, the disease, according to Sanarelli, "brings about a rapid fatty degeneration of the histological element of the liver; in the digestive tract, it produces hematogenous gastro-enteric lesions; in the kidneys, it produces an acute parenchymatous-nephritis. The patient is threatened with three

prominent dangers, and a bacteriologic examination of the cadaver can approximately give testimony as to the principal cause of death.

“ 1. When the bacillus icteroides is found in the cadaver in reasonable numbers and in a state of relative purity, in the cases which follow the morbid cycle to the end, death may be considered as being due principally to the specific infection.

“ 2. When an almost pure culture of the other microbes is found in the cadaver, death may be considered as due to the septicemia produced during the course of the disease.

“ 3. When the cadaver is found sterile and showing a large proportion of urea, death may be due to renal insufficiency.”

As is proved by my clinical charts, I had already seen and symptomatically differentiated the forms of death in Yellow Fever.

These clinical and bacteriologic views unhappily do not yet yield therapeutic indications. We are practically powerless to combat the hepatic cellular lesions and acute parenchymatous nephritis. Neither have we any way of acting directly against black vomit, as it is due to lesions of the degenerated mucous membrane, to alterations of the blood, and,

especially, to the rupture of capillary blood vessels.

I have tried against the latter all the hemostatics, astringents and coagulants known, and without success. I have never obtained good results with injections of ergotin. Absolute rest of the stomach has seemed to give me the best results; put nothing, not even a drop of water, within the bleeding organ, and apply an ice bag over the epigastrium.

Following black vomit, the temperature falls suddenly eight and ten degrees—to 97 or 96 deg.; the patient becomes cold, and I order frictions made with hot vinegar over the whole body; I have even given hot baths.

If the pulse is weak and compressible, I try to strengthen it by the subcutaneous injection of 1 milligram of digitalin or 25 centigrammes of caffein. If there is considerable nervous depression, I resort to hypodermic injections of ether, of cognac, or of camphorated oil. Inhalations of oxygen, which have a marked hemostatic action in other diseases, have been tried without result.

At times, I give rectal injections of strong, black, hot coffee, to which are added two tablespoonfuls of brandy. I battle to the last.

I have often seen patients with black vomit and in a desperate condition recover, without, however, being able to say this or that had done good, and besides, with the same sort of treatment, I have seen so many die.

Recovery sometimes occurs after black vomit, when the temperature remains elevated between 102 deg. and 103 deg. and hemorrhage is not very profuse or frequently repeated. It may be that in such cases secondary infections produce septicemia and destroy the bacillus icteroides, by means of their microbes and toxins.

According to Sanarelli, the bacillus icteroides is found to be absolutely inferior in biologic conditions to resistance against the streptococcus, the bacterium coli, and the proteus.

Septicemia due to the streptococcus or the coli bacillus is characterized by the lack of fall of temperature when black vomit occurs; hence, it would seem to be less grave than the pure icteroid infection, and would sometimes be followed by recovery.

However, these etiologic shades are not yet sufficiently understood clinically to give any therapeutic indications.

When parenchymatous nephritis is very acute, all renal function is arrested, as well

as the organic filtration; hence, if together with the black vomit, uremic accidents follow: delirium, coma, convulsions, inhalations of oxygen might be tried, frequently repeated, to control these accidents. Intestinal derivation might be resorted to, following Jaccoud's treatment. Large enemata of cold, tepid or warm water intended to be retained, are indicated to combat suppression of urine. Lavage of the blood by means of Hayem's serum has been found useless.

In all cases of very acute infection one can only repeat after Faget, when confronted by a case of chronic tuberculosis or of cancer: "Poor Medicine!"

I have often seen patients recover after having had black vomit, even after having had suppression of urine for a few hours; but, after having employed the means just indicated, even subsequent to recovery, I have remained modestly persuaded that the organism itself had worked out its own salvation by means absolutely ignored by me.

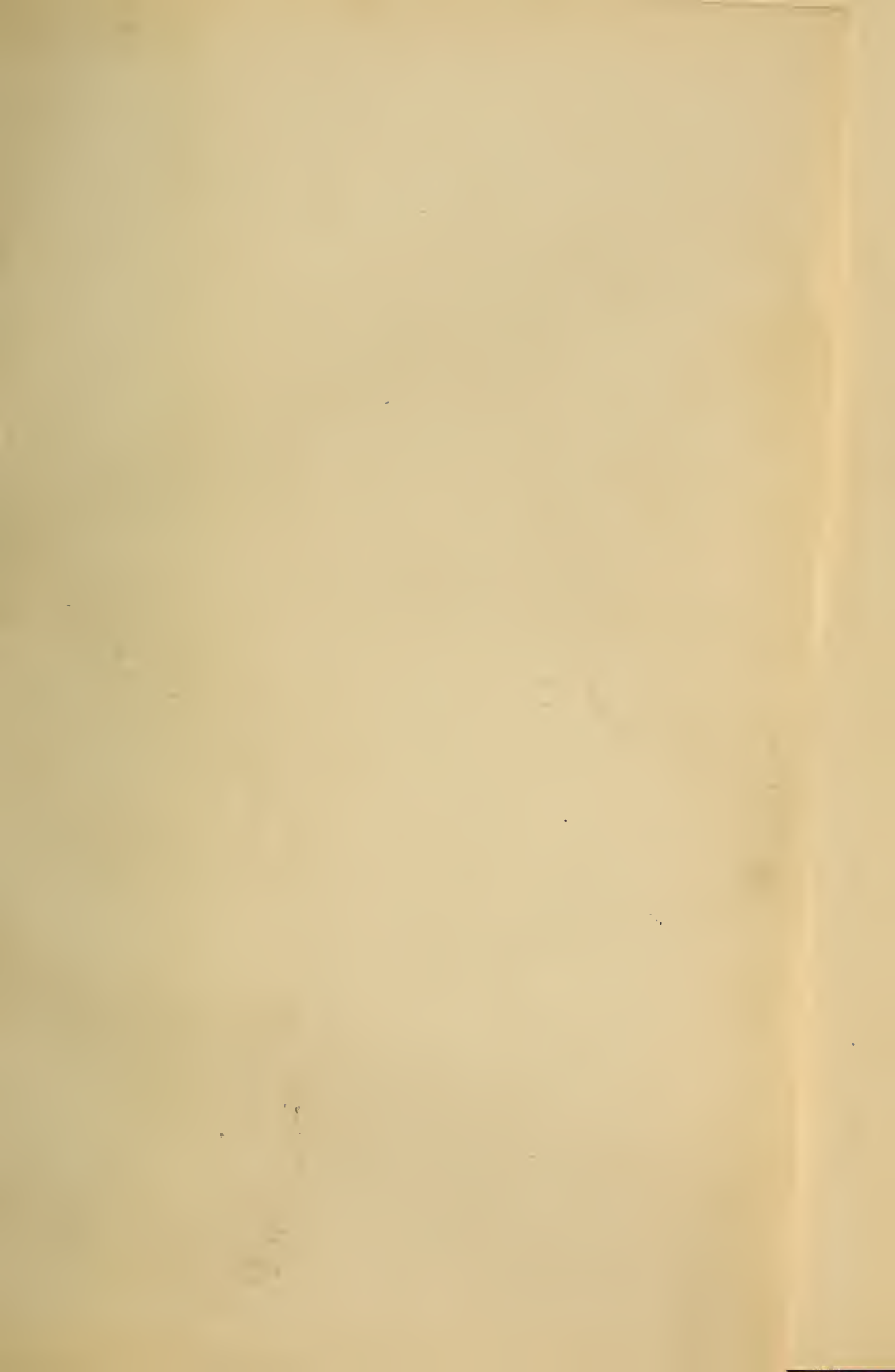
In 1867, I was treating a young woman who had abundant and repeated black vomit, accompanied by scantiness of urine on the fourth day of Yellow Fever. I thought the patient

lost, when, the next day, my attention was called to a large, red, inflamed and fluctuating abscess which had formed in twenty-four hours on the upper third of the right thigh. I promptly opened and emptied this abscess and my patient recovered. Since then I have seen three other cases of very grave Yellow Fever, with black vomit, in which formation of pus was followed by recovery; hence, I have been accustomed to say that when pus is formed during the course of Yellow Fever recovery follows.

These observations were recalled when, a few years ago, Professor Fochier, of Lyons, proposed as a last resort in infectious diseases the subcutaneous injection in the cellular tissue of four or five drops of essence of turpentine to produce large abscesses. I was struck by the connection between the ideas of Fochier and my observations in Yellow Fever. Fochier and others have reported recoveries in desperate cases of septicemia, principally puerperal, obtained by these injections.

I had proposed to try these injections in hopeless cases, but I did not see a single case of black vomit during the epidemic of 1897. This medication should be tried.

The mortality in Yellow Fever has greatly diminished since the great epidemic of 1853. I believe that by means of proper treatment the tribute paid to the Yellow ogre can be further reduced, while awaiting the prophylactic and curative serum expected of Sanarelli.



LIBRARY OF CONGRESS



0 029 827 994 0